JANUARY · 1959

Rock Products

THE INDUSTRY'S RECOGNIZED AUTHORITY



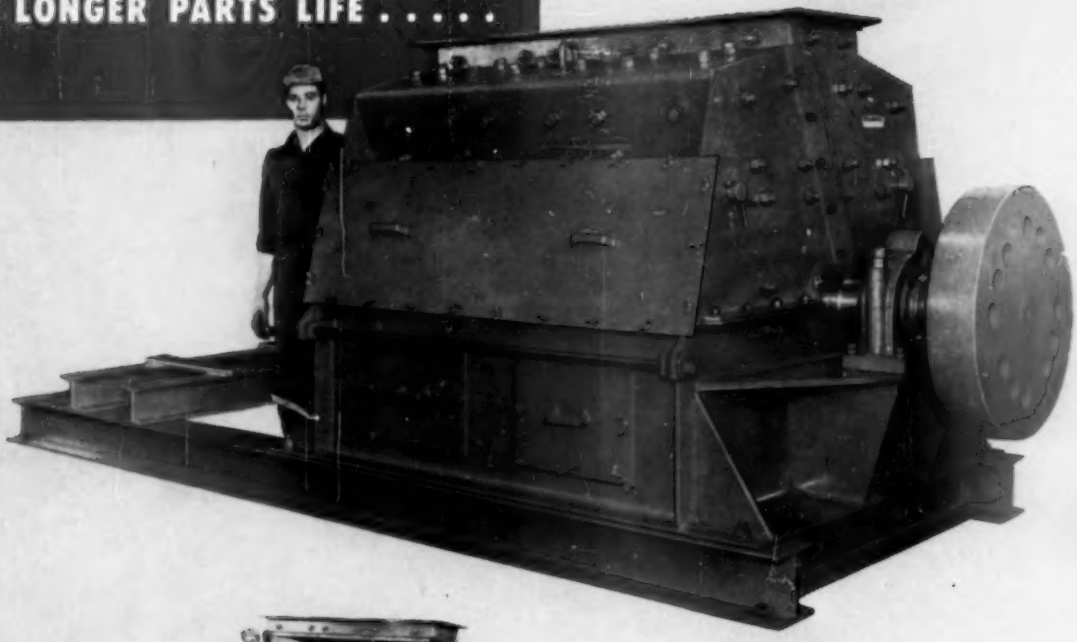
Forecast for '59:

Another record breaking year ahead for rock industries

page 76

NEW DUAL "2-POINT" ADJUSTMENT INSURES MORE UNIFORM GRINDING, LONGER PARTS LIFE . . . . .

WILLIAMS *Reversible* HAMMER MILLS





Williams Reversible Hammer Mill with cover open.
Note these features:

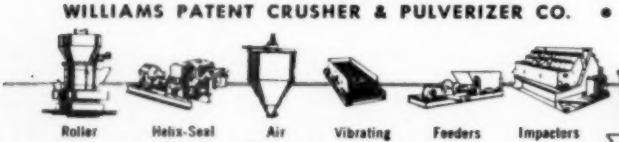
- Super-strong reinforced steel plate frame
- Renewable wear-resistant manganese steel liners
- Heavy duty oversize forged steel rotor shaft
- Anti-friction self-aligning roller bearings in dust-tight housings
- Complete accessibility to interior for quick parts changing

It's another Williams "first"—features not available in other hammer mills—that now makes it possible to maintain the original close clearances of *both* grinding plates *AND* cage sections against the rotating hammers. This easy-to-make "2-point" adjustment, in the most critical grinding area inside the hammer mill, gives absolute assurance of consistently uniform product quality.

In addition to the advantages of the Dual "2-Point" Adjustment, a Williams Reversible Hammer Mill substantially lowers upkeep expense by cutting hammer cost. Hammers can be operated in one direction today and another tomorrow simply by installing a simple reversing switch on the driving motor. Manual reversing of hammers no longer necessary. Grate bars also last longer. The double set of reversible manganese breaker plates, which last twice as long as other types, give four times the service! Maintenance and downtime are cut 50% or more.

Get all the facts about the hammer mill with *ALL* the top features.

WILLIAMS PATENT CRUSHER & PULVERIZER CO. • **800 ST. LOUIS AVE.** • **ST. LOUIS 6, MO.**

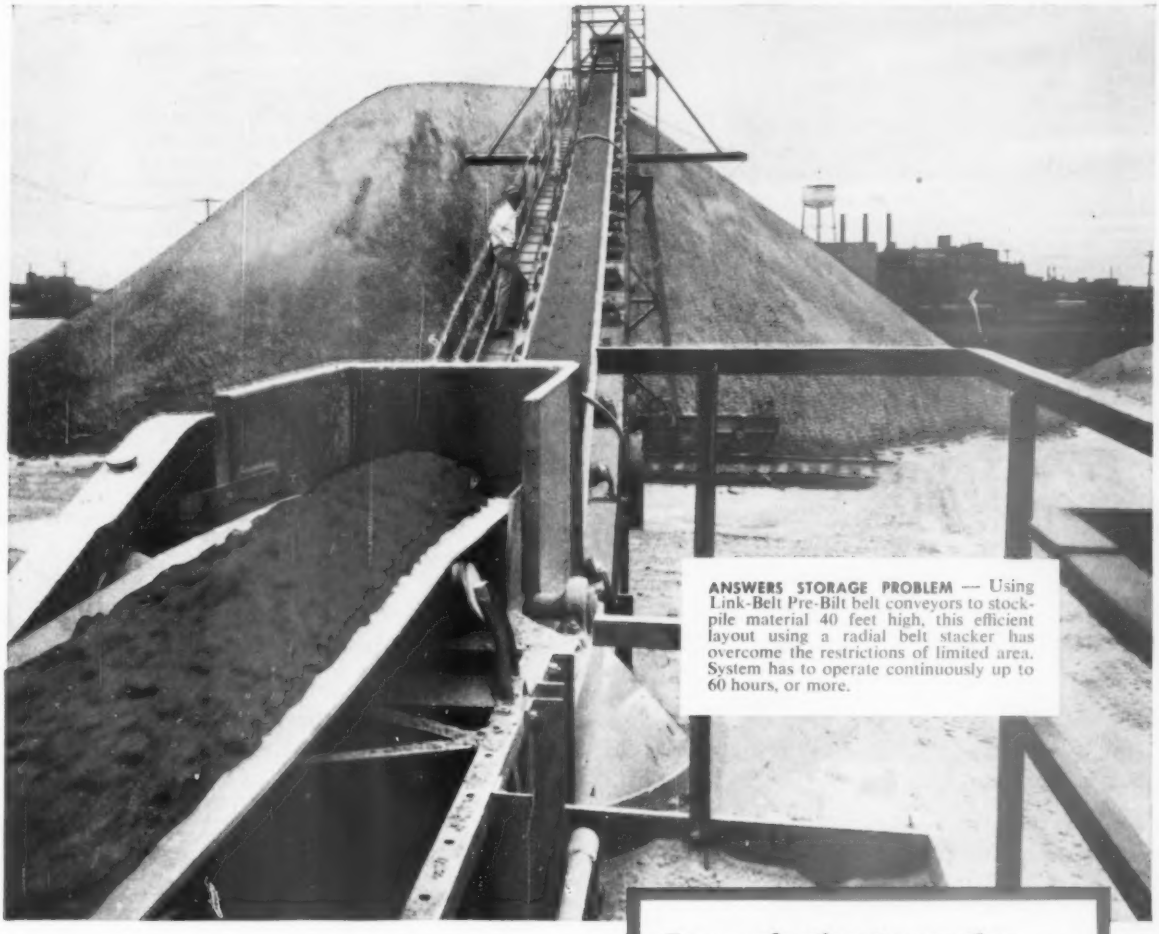


WILLIAMS
CRUSHERS GRINDERS SHREDDERS
Oldest and Largest Manufacturers of Hammer Mills in the World

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Durable answer to you who have asked for a

husky sectional belt conveyor



ANSWERS STORAGE PROBLEM — Using Link-Belt Pre-Bilt belt conveyors to stockpile material 40 feet high, this efficient layout using a radial belt stacker has overcome the restrictions of limited area. System has to operate continuously up to 60 hours, or more.

LINK-BELT Pre-Bilt Belt conveyors handle up to 1500 tons per hour

Per pound of weight, no other sectional belt conveyor tops the strength and rigidity of Link-Belt Pre-Bilt Sectional Belt Conveyors.

For full information on these durable conveyors up to 36 in. wide—with drives up to 40 hp, 24 and 42-inch truss depths or simple channel stringer type — contact your nearby Link-Belt office.

LINK-BELT

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14,787

From selection to erection . . . you save every step of the way with quality pre-engineered equipment

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LOWER PURCHASING COSTS—Interchangeability and standardization reduce costs and speed selection of parts . . . all available from Link-Belt.

NO COSTLY DELIVERY DELAYS—PRE-BILT conveyors are built at eight strategic locations and are shipped from the plant nearest you to assure prompt delivery.

QUICK LOW-COST INSTALLATION—Simple construction and shop-assembled components facilitate field assembly and installation by your own or Link-Belt erectors.

MINIMUM OPERATING COST—These conveyors require a minimum of power for the tonnages of materials handled. Maintenance normally consists only of lubrication.

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JANUARY 1959

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B.F.Goodrich



Rubber builds a rock pile to hold back a river

B.F.Goodrich improvements in rubber brought extra savings

Problem: Millions of tons of gravel and clay will be carried two miles down that mountainside to build one of the world's largest earth-fill dams. Because of the heavy loads, only short lengths of ordinary conveyor belts could be used. But every extra transfer point where one belt dumps onto another adds to costs. They needed a belt strong enough to carry this "fill" from mountain top to dam site in just a few long flights.

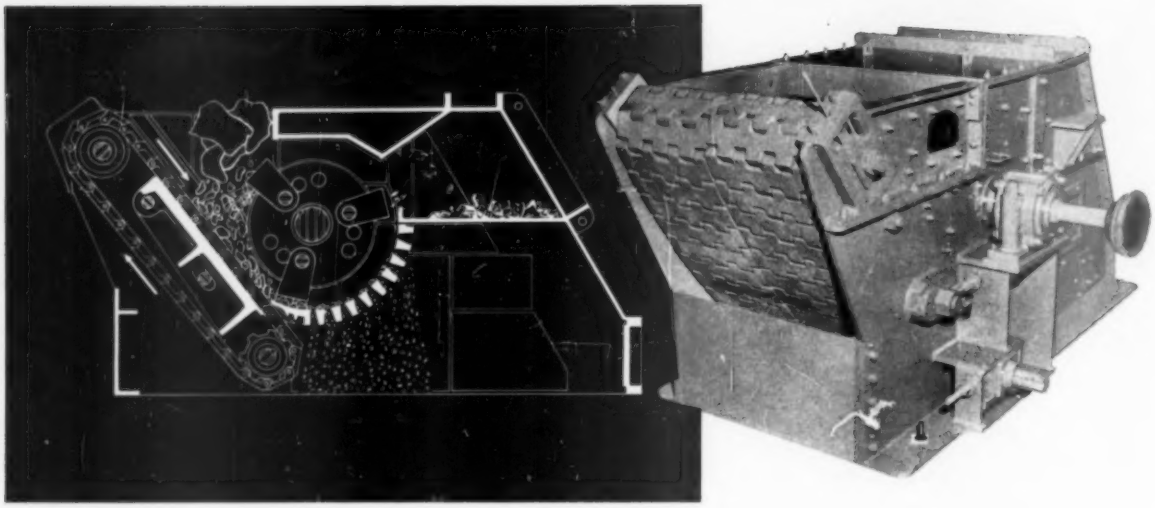
What was done: Engineers recommended that the gravel and clay be carried by a series of only nine B.F. Goodrich Nyfil conveyor belts—one of them nearly a mile long. In this belt, nylon is used as cross threads in the fabric to give extra flexibility and decrease weight. Belts made with Nyfil fabrics have greater impact resistance, can carry heavier loads farther than belts made with ordinary fabrics. Yet these stronger, longer-lasting belts cost no more.

Savings: On this construction job, the number of transfer points was reduced almost to half by using B.F.Goodrich Nyfil belts. This means big cuts in construction, operation and maintenance costs. Almost 3000 tons per hour are carried by the nine B.F.Goodrich belts.

Where to buy: Your B.F.Goodrich distributor has full information on the conveyor belts described here. And, as a factory-trained specialist in rubber products, he *can* answer your questions about *all* the rubber products B.F.Goodrich makes for industry. *B.F.Goodrich Industrial Products Co., Department M-498, Akron 18, Ohio.*

B.F.Goodrich *industrial rubber products*

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FOR CRUSHING WET AND STICKY MATERIALS

If you're bothered with plugging and time lost getting the mill clear, here's the crusher that'll do away with your troubles. It's the Pennsylvania Non-Clog Hammermill. When in operation the traveling breaker plate carries the feed into the path of the hammers at a fixed rate of speed, making it impossible for the sticky feed to build up on the breaker plate out of reach of the hammers. In extreme wet feed conditions, where frequent clean-outs in the rear of the crusher may be necessary, the Non-Clog can be equipped with a self cleaning device. For complete information on the Pennsylvania Non-Clog Hammermill, send for bulletin 1052. Pennsylvania Crusher Division, Bath Iron Works Corporation, West Chester, Pennsylvania.

Pennsylvania CRUSHERS

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FAST FOOT WORK Can Make High Output Possible!

THE NORTHWEST 80-D, 2½-yd. Shovel is a *real* Hard Rock Rig. It is readily adaptable to the varied problems that occur in pit mining and quarry service.

There are three 80-Ds in the Santa Catalina Quarries of the Connolly Pacific Company, and they have to be nimble rigs. One of these is brand new, the 16th Northwest in the growth of this progressive outfit. The new Northwest replaced an old 80-D that had been in service since 1942 and had handled upwards to 5,000,000 tons of rock and Basalt.

The quarry face is 200 to 250 feet high and is almost solid rock. Rock is fractured by dynamite and then the shovels by loosening key boulders start landslides. The shovels and trucks must move quickly to escape the cascading rock and overburden.

Northwests are built for jobs like this—Northwests load fast and move fast! Plenty of power combines with the Northwest Dual Independent Crowd that utilizes force most independent crowd shovels waste to cut through a bank or handle heavy digging without "stuttering". Uniform Pressure Swing Clutches take the jerks and grabs out of swinging and make spotting accurate without losing time jockeying a load over the truck. The Cushion Clutch eliminates shock overloads before they reach machinery and the "Feather-Touch" Clutch Control gives the feel of the load and makes operation easy without resorting to pumps, compressors, and other delicate mechanism.

This is only part of the story. We would like to have you know the complete details on the size machine you need. Why not ask for a catalog?

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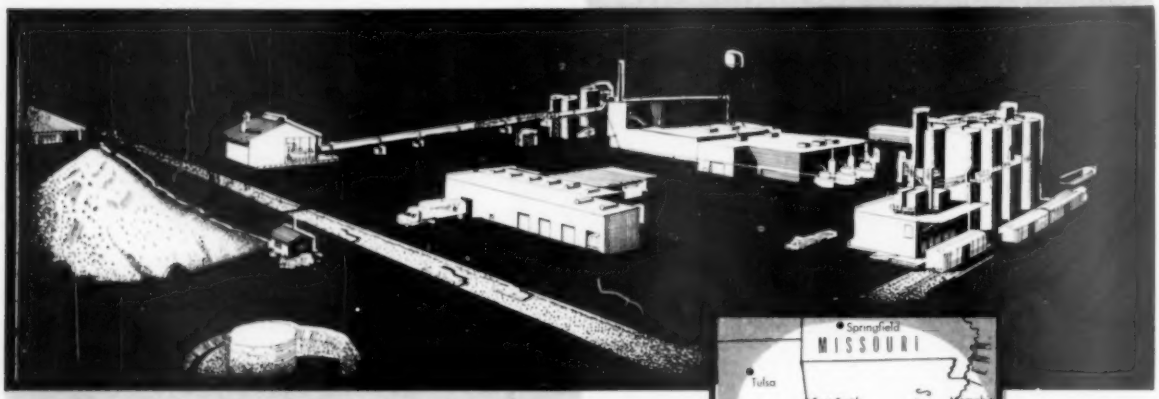
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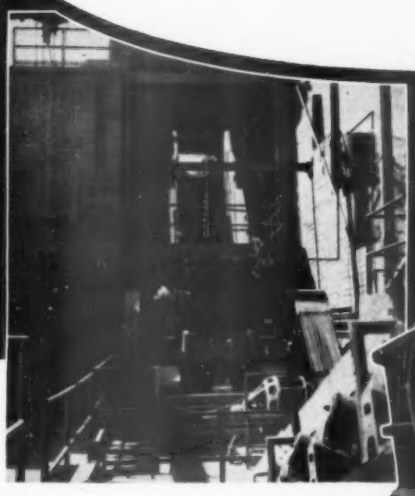
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Telephone: Linden 2-6217

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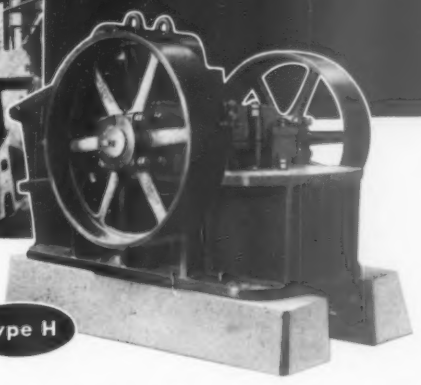
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H and HB JAW CRUSHERS



48" x 60" Type HB Jaw Crusher in primary service, reducing quarry material to minus 8".



Type H

The forged steel swing jaw shaft and the patented swing shaft suspension are just two of the features that are built into Traylor Jaw Crushers. Another outstanding feature is the curved jaw plates employing the principal of the famous curved fittings which have proved so successful in Traylor Crushing machinery. For further information on Traylor H & HB Jaw crushers write for Bulletin No. 5105.



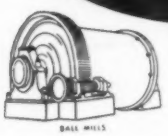
Type HB

Traylor

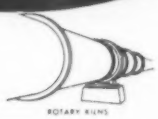
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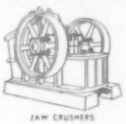
ROTARY KILNS



APRON FEEDERS



PRIMARY GYRATORY CRUSHERS



JAW CRUSHERS



SECONDARY GYRATORY CRUSHERS

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Operating 19 Link-Belt Speeder shovel-cranes, Gifford-Hill Companies from Louisiana to West Texas demonstrate how

King-size

HERE's an organization that has standardized on Link-Belt Speeder shovel-cranes—uses models ranging from ½ to 3-yard capacities. Their experience with the King-size K-models (the 1¾-yd. K-370 and the 3-yd. K-608) has proved the K's are as fast and maneuverable as smaller rigs . . . frequently outproduce machines of larger ratings.

This bonus in output stems from the many Link-Belt Speeder advanced design features including Speed-o-Matic power hydraulic controls . . . bonus usable horsepower . . . hydraulic power steer.

If you'd like details on any Link-Belt Speeder crawler or rubber-tired models and the facts why they will help you move ahead of competition—contact your distributor or write LINK-BELT SPEEDER CORPORATION, CEDAR RAPIDS, IOWA.

OPERATOR'S REPORT: Running one of Gifford-Hill's 19 Link-Belt Speeder machines (a K-595 dragline) is Eugene Jistel. He says, "It's a very fast dragline for getting the work out . . . also is very easy to handle because of Speed-o-Matic. It has plenty of power and is easy to steer."



K-models deliver bonus output



AVERAGE PRODUCTION IS HIGH for this K-608 at Gifford-Hill's Bridgeport, Texas operation. Rig is equipped with torque converter as standard equipment. High-speed cycles pay off in a hurry, also increase efficiency of haulers.



1¾-YD. K-375 STRIPS OVERBURDEN—LOADS TRUCKS. With Speed-o-Matic controls, bonus usable horsepower (138 hp at the drums), power steer and extra strength of all components—this K-375 maintains steady pace year after year.

LINK-BELT SPEEDER



It's time to compare . . . with a Link-Belt Speeder

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"151,000 MILES WITHOUT A MAJOR OVERHAUL!"

says Clarence F. Guthrie
Canonsburg, Pa.





Every Ford has
SAFETY GLASS
in every window

"Ford's 332-cu. in. V-8 is the hottest thing on the road for its size!

"Our fourteen Ford trucks all have exceptional durability records. Several '55 T-800 dumps, grossing 48,000 lb., have over 200,000 miles on 'em. They went an average of 150,000 miles before we touched the engine. And for power and performance, too, the Ford 332 engine is the hottest thing on the road for its size.

"Ford's better visibility, handling ease and power steering are big factors in our excellent highway safety record. We've had many million-mile accident-free years with our Ford fleet.

"In addition to our sand and gravel business, we have ten Ford F- and C-800 tractors that make long, over-the-road trips hauling limestone one way and steel on the way back.

"On these trips parts availability is very important. Ford Dealers are about everywhere, and they all stock parts. We never get delayed waiting for Ford parts."

GO FORD-WARD for savings with '59 Ford Trucks!

Whatever your job . . . wherever you do it—you'll find Ford Heavies and Extra Heavies are engineered and built to do it better! And the '59 improvements in these models will bring still more benefits to your operation.

Greater operating economy with new, faster rear axle ratios and wider choice of transmissions.

Higher payloads and longer axle life with new, higher-capacity front and rear axle options for most models.

Factory installed tractor package custom-fitted to Ford trucks for safer, more dependable braking.

More efficient parking brake of the internal expanding type has approximately 50% greater stopping and holding ability, requires less than half the operating effort needed for the previously used type.

Yes, the new '59 Ford trucks are here to take you *Ford*-ward for savings, *Ford*-ward for modern style and stamina.

See your Ford Dealer today!

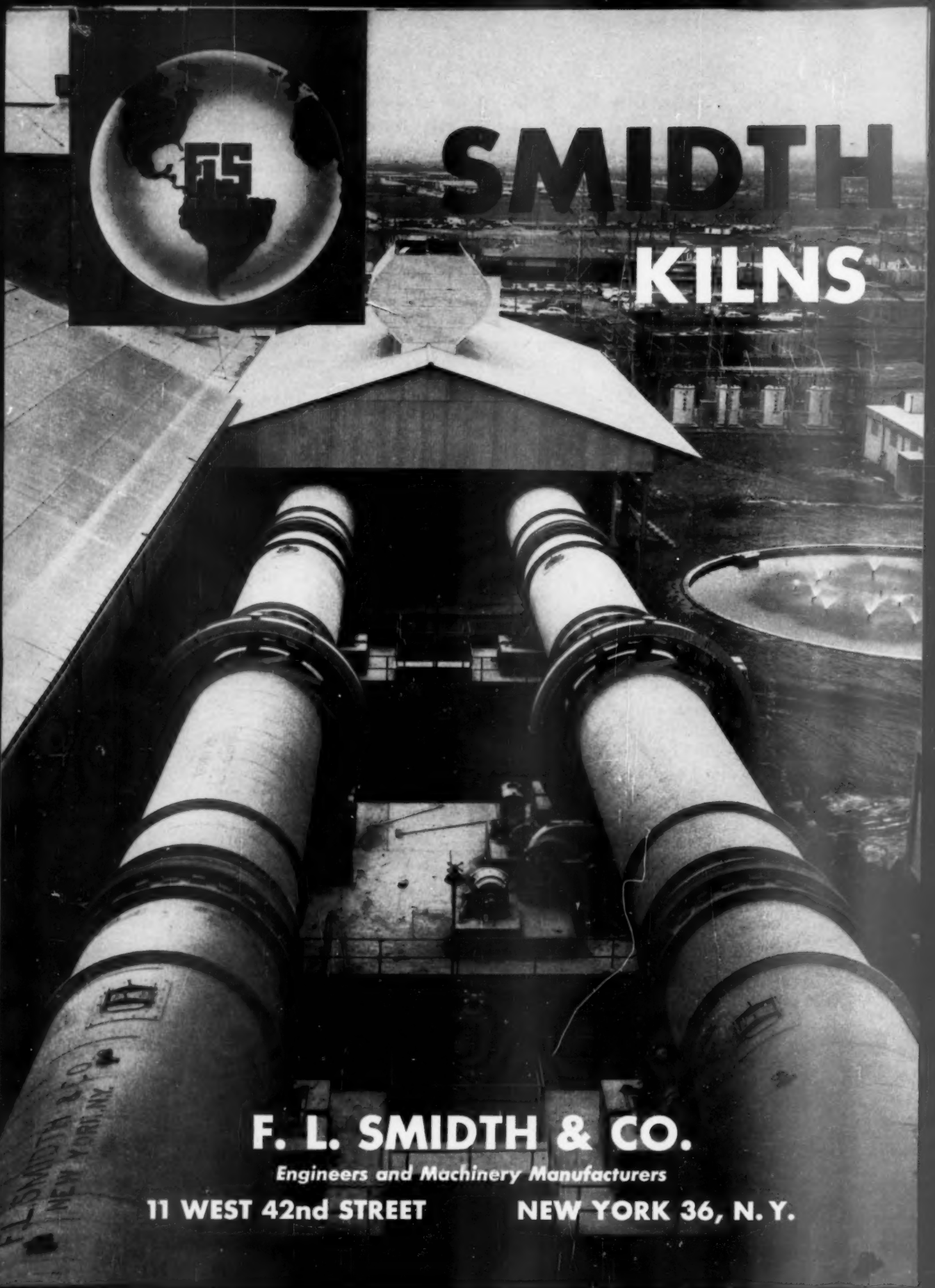


NEW '59 FORD F-600 DUMP carries a maximum GVW rating of 19,500 lb. Now available with optional 6000-lb. front axle for greater capacity, longer life.



FORD TRUCKS COST LESS

LESS TO OWN . . . LESS TO RUN . . . LAST LONGER, TOO!


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What's Happening

IN OTHER FIELDS OF INTEREST TO THE ROCK PRODUCTS INDUSTRY

January, 1959

Atomic energy as a means of measurement has been noted in two sectors. First, an announcement by New York Central Railroad concerns the development of a scale that weighs cars moving over it at speeds up to 30 mph. Gamma rays from a cobalt 60 source are employed by the scale located beneath the rails; the rays penetrate the cars and the device, measuring the amount of absorption, computes and records the weight of each car. A second unit recently announced is the atomic package-measuring device of Nuclear Corp. of America that automatically checks containers for filling or underfilling of liquids, solids or combinations. Called Indicon 1-200, it uses isotopes to produce dual radiative beams. The beams penetrate the containers, passing at a rate of 1,000 per minute, and register at the opposite side of a pair of high and low signal points.

Additives to make water more viscous and opaque are being researched at Syracuse University under a project sponsored by the Navy's Bureau of Yards and Docks. The object: to develop a highly efficient fire fighter. Finely divided clays and talc are being used to make the water opaque, and high molecular weight materials, such as water soluble cellulose derivatives, make it viscous. Syracuse researchers believe that viscosity makes the water a more effective cooling agent, and opacity reduces the danger of fire spreading by radiant heat. Water with these additives quenches fire in less than a tenth of the time required by ordinary water. It can be used in regular fire fighting equipment, such as hoses and sprinkler systems.

Agricultural classification of soils benefits the highway engineer in determining their suitability for stabilization with portland cement. Irrespective of the soil series, soils from any major group have similar characteristics in this regard. This conclusion is reached in a report by Britain's Road Research Board. They found, for example, that soils belonging to the podzol group contain organic matter capable of seriously retarding the hardening of cement, while those from the calcareous group do not appear to contain any constituents that interfere with the hardening process.

A mine drainage project to protect 35 million tons of hard coal reserves in Pennsylvania against flooding has been approved by the Department of the Interior. Financed jointly by the federal government and Pennsylvania, the project calls for installation of four turbine-type pumps at the Truesdale mine of Glen Alden Corp. in Hanover Township. The anti-flooding program was authorized by Congress in 1955.

California scientists studying air pollution have discovered that combustion of incinerated refuse produces an irritating air pollutant, formaldehyde. They suggest that only enough air be allowed into the incinerator for complete combustion. Adding more air to eliminate smoke simply replaces smoke with invisible formaldehyde.

Coloring highways as a guide to motorists is being tested here and abroad. In Los Angeles, blue and green dyes are being mixed with concrete for destination guides. At the Army's Fort Hamilton, Brooklyn, colored bands or sections are applied to roadways to warn motorists of intersections or reduced speed limits—yellow for "slow," red for "stop." This plan has been submitted to the Bureau of Public Roads for application to the Federal Interstate System. And, near Harrisburg, Pa., a stretch of plastic road gives impetus to discussions about coloring entire stretches of highways because of ease of coloring the material. Aluminum manufacturers have recommended a study of using a by-product, Jamaica red mud, in asphaltic paving mixes—a practice that has been under study in Rome. Coloring of roadways also has been noted in West Germany, where dye-mixed concrete helps motorists avoid congested areas. Approaching a city, the driver takes a yellow road to the shopping district, a blue one to the arterial through route.

A chemical adhesive that can bind any two materials together—metal to metal, metal to rubber, enamel to rubber, plastic to glass, etc.—is being marketed by Eastman Chemical Products, Inc. Some materials, like wood, can be glued indefinitely, say company officials, and in most materials, only extreme heat can break the bond. Chemically, the glue is known as methyl 2-cyano acrylate.

Demand for engineers again threatens to outrun the supply. The U. S. Office of Education and the Bureau of Labor Statistics, preparing a report for the National Science Foundation, discovered that industry will need 50,000 engineering graduates next June, but only 39,000 will be graduating. This indicates an upswing in the recruiting techniques that were curtailed in the recession months. By October, 1958, the number of engineering jobs available had gone up to 4,335 from 1,400 in July. In greatest current demand: electrical and mechanical engineers.

Full-scale production of liquid fluorine has been reached at the newly opened plant of Allied Chemical Corp. in Metropolis, Ill. Most of the present output will be processed with uranium ores to produce uranium hexafluoride. The latter is being used to make enriched uranium for the Atomic Energy Commission. Allied also is furnishing the chemical to rocket engine makers for rocket testing. As a rocket fuel oxidizer, fluorine might be used to help send missiles to the moon and beyond.

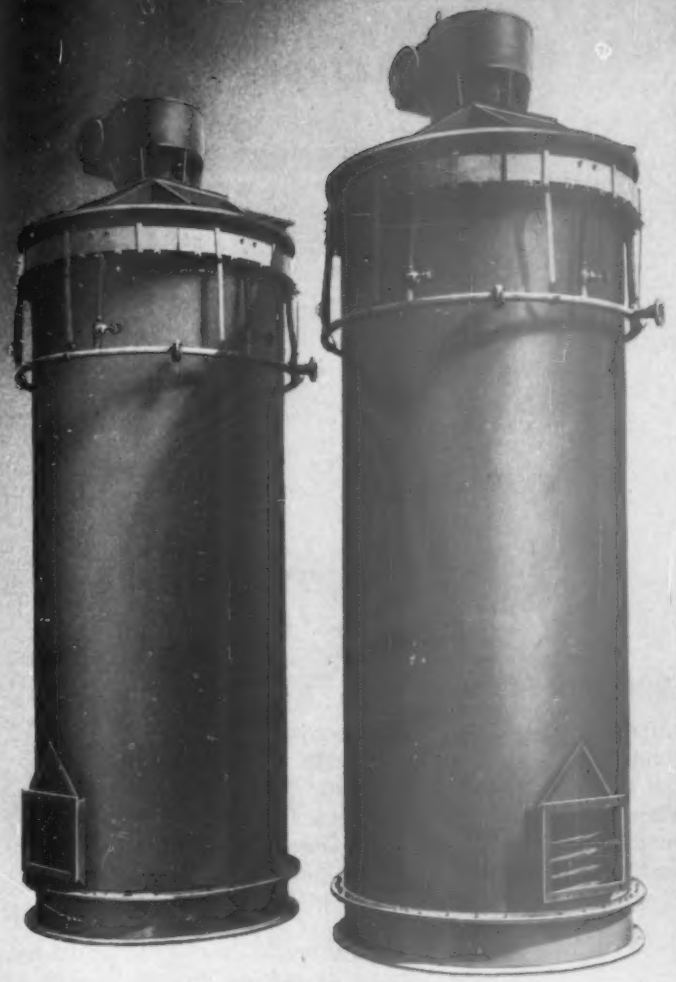
Ballast on subway roadbeds will be cleaned and returned in one operation by a machine to be built by New York's Transit Authority. The proposed machine would put the trap rock ballast in a shaker, separating foreign material into a bin for disposal and returning cleaned ballast to the roadbed. Similar machines are used on major rail lines, said Charles L. Patterson, Transit Authority chairman, but they are not adaptable to the subways.

"Fasten seat belts" could become a byword for operators of big earth moving equipment. Caterpillar Tractor Co. suggests that for safety and comfort operators wear special company-distributed seat belts similar to those worn on airliners. In case the tractor should topple over, the belt has an over-center latch that allows the driver to throw it open and avoid being pinned under the machine.

The editors

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EDITOR'S PAGE

George C. Lindsay, Editor

1959 – A record rock products year

PRODUCTION OUTLOOK for rock products not only looks good for 1959, it's a little bit startling. From all indications, your industries will be keeping ahead of the national economic growth picture.

Analyses of the '59 growth potential appear in this issue, beginning on page 76. We urge you to read them, to get the same feeling of optimism that we got when we assembled the data.

The cement industry looks forward to an increase of six percent in output this year. At the same time, improvement in use of capacity is expected to jump to 87 percent—eight points above 1958.

Sand and gravel producers predict a whopping 25 percent jump in output this year—a spectacular rise. The industry reported an increase in efficiency of 19 percent last year. A further increase is expected this year.

Crushed stone people are equally optimistic. They say they'll beat 1958's output by 19 percent. Like their counterparts in sand and gravel, they also are improving efficiency in production.

Other rock products industries—lime, slag, gypsum, lightweight aggregates—expect to boost output in 1959. Lime, which had a little trouble marketwise last year, will bound back to a much better level in 1959. Lightweight aggregates producers are particularly hopeful; they expect to beat 1958 output by 28 percent this year. A major problem in that field, according to some, is that of "boosting production to meet demand."

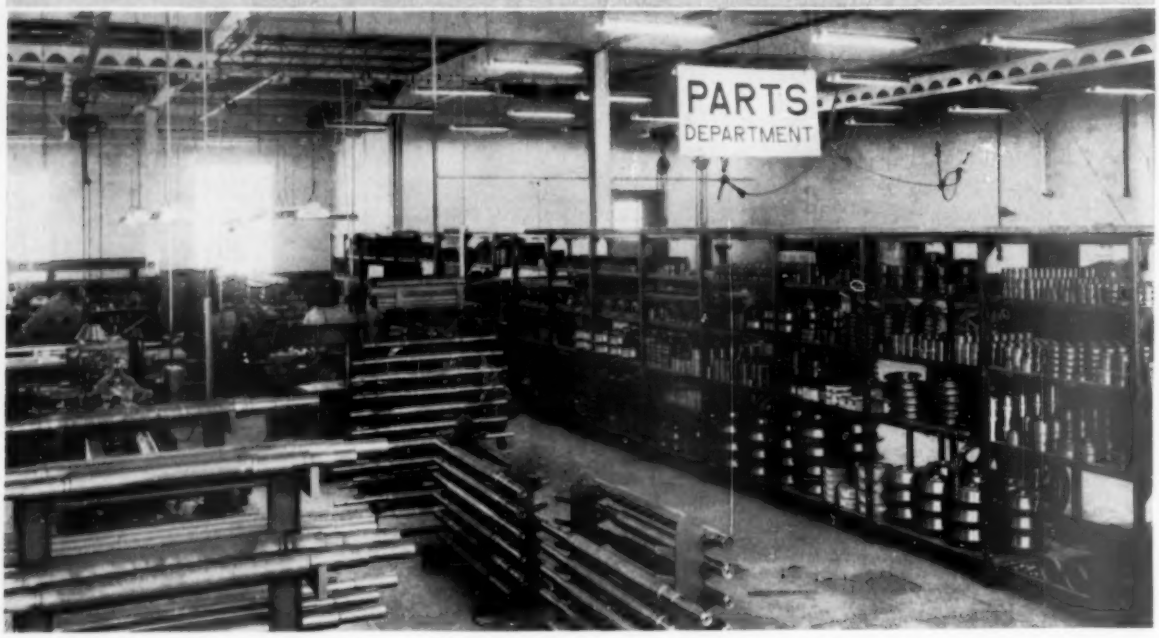
It is particularly gratifying to note that accents in production, this year and years to come, will be on improved efficiency and better quality. Hopes here rest on the application of mechanization and even automation technology. Even though the industries are growing fast in volume of output, the move toward modernization and greater efficiency is growing faster.

Adding these cheery predictions together will make 1959 a record year in output for rock products. And, if we read the signs properly, that's only the beginning. The long-range picture, as reported, is brighter yet.

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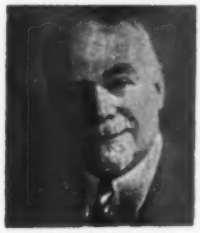
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ROCKY'S NOTES

NATHAN C. ROCKWOOD



Alkali-aggregate reaction—

profitable and unprofitable

SO-CALLED "RESEARCH" on the cement-alkali aggregate reaction in concrete continues although present-day textbooks on cement and concrete contain enough information for successfully meeting this problem. The latest report of test results to come to our notice is "Technical Report No. 6-481" of the U. S. Army Engineer Waterways Experiment Station: "Effectiveness of Mineral Admixtures in Preventing Excessive Expansion of Concrete Due to Alkali-Aggregate Reaction," dated July, 1958. The preface states that this investigation was authorized January 30, 1950. Thus it has been eight years in the making. The results remind us of the ancient adage, "and the mountain labored and brought forth a mouse."

The experimenters tried various pozzolans by the usual chemical tests and by mortar-bar expansion tests as various other experimenters have done before, and through means of voluminous tables of data and a few graphs came to the startling conclusions that: "All the materials tested in this study will effectively reduce expansion if sufficient amounts are employed in the mixture. All the materials exhibit a beneficial effect in regard to expansion other than by dilution [meaning, of course, the less cement in the mixture the less the expansion due to the alkali it contains]. A synthetic silica glass was found to be the most active admixture. Only 10 percent replacement by volume is needed to reduce the percentage expansion by 75 percent in two weeks; next, the calcined shales, requiring 19 to 29 percent replacement; the uncalcined diatomite, requiring 22 percent; the volcanic glasses, requiring 32 to 36 percent, and lastly, the slags and fly ashes, requiring 39 to 45 percent."

The second conclusion is the same as that reached by previous experimenters and quite generally recorded at present in the newer textbooks, that "as yet" there is no satisfactory chemical test for a pozzolan. Thus, so far as we can see, nothing new has been contributed toward the solution of a problem which concrete researchers have made theoretically very complicated. It is quite possible that a specialist who knows more chemistry of silica (or of silicon) would find the subject not so complicated. Unfortunately, the chemists who do know silica and the silicates best appear not to be much interested in cement and pozzolans. Their interest is primarily in the silicones and those similar to organic compounds in which silicon replaces carbon, or in reactions in which silica or the silicates serve as catalyzers.

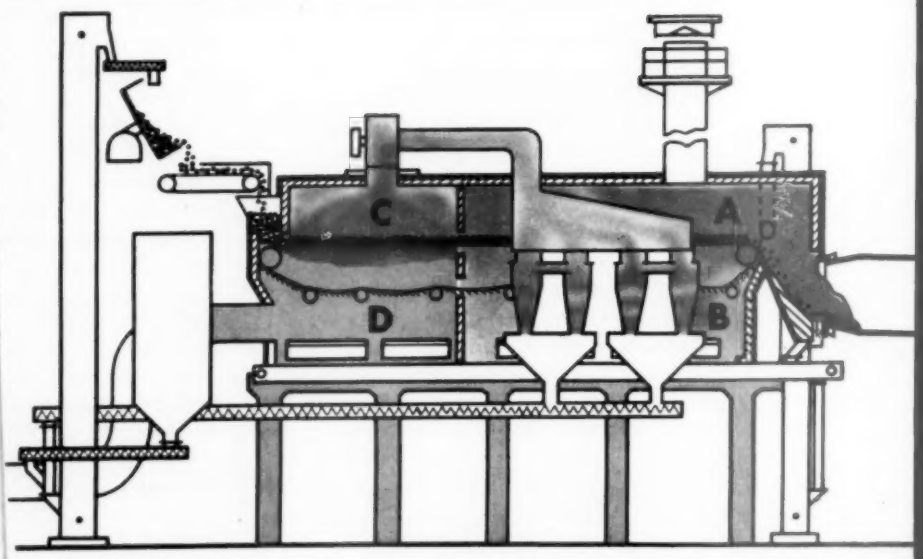
The secret of a good pozzolan (as well as the binding power of portland cement) is very probably tied directly into the structural chemistry of silica. As an example of the kind of work being done elsewhere on the silicates, we have before us a paper in the July, 1958 **Journal of Physical Chemistry**, on "Reactions of Freshly Formed Surfaces of Silica," by R. E. Benson and J. E. Castle of the Central Research Department of E. I. du Pont de Nemours & Co. The summary of this paper states: "The rupture of silicon-to-oxygen bonds in silica has been shown to produce active sites that are capable of reacting with olefins and with alcohols. These reactions can be effected by grinding silica in the presence of organic liquids or by simple mixing of the organic materials with silica that has been ground and stored in an inert atmosphere. A probable mechanism for these reactions is presented."

Both the title and the contents should prove intriguing to anyone interested in research on portland cement and pozzolans. Silica (or silicate) is different from other mineral substances in that it occurs in single chains and in lattices of two and three dimensions, all very tightly and strongly

Please turn to page 156

Clean and...
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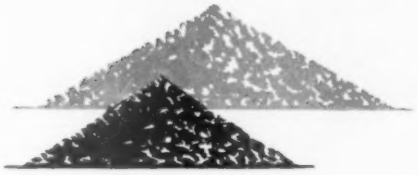
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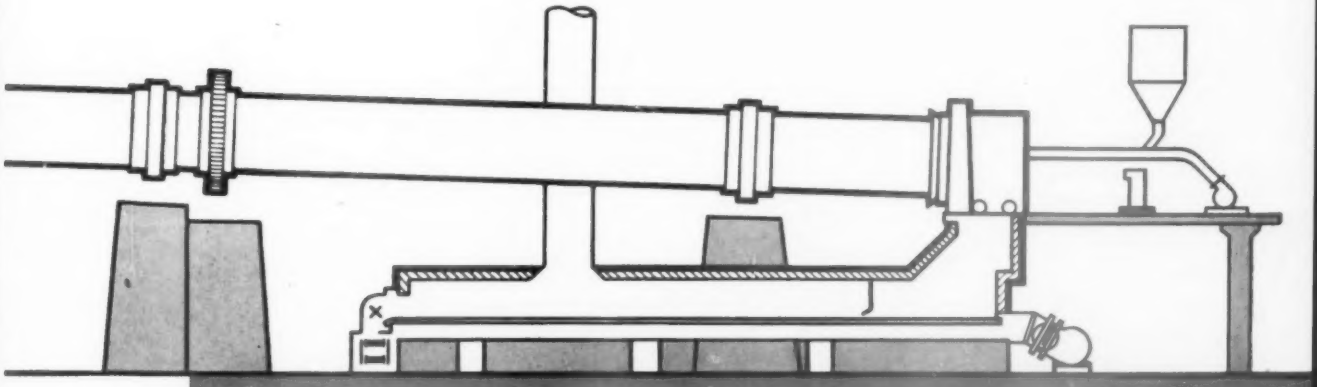
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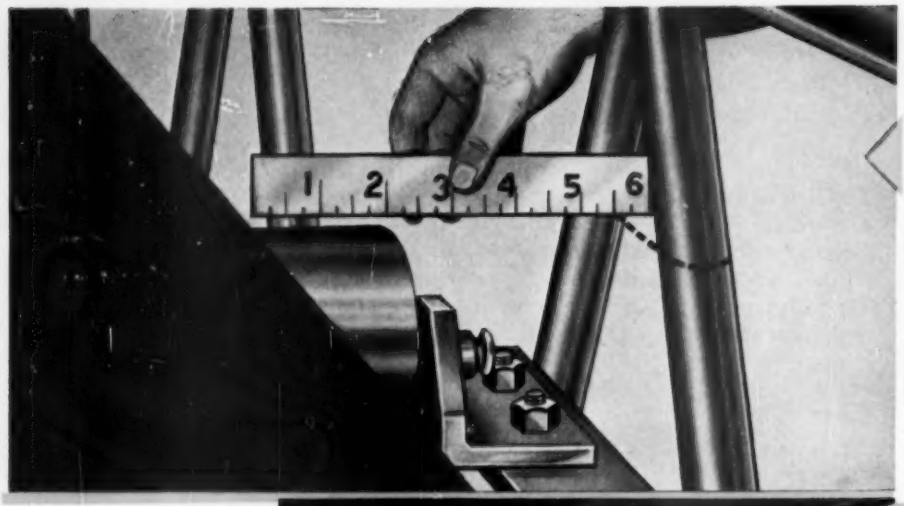
How the *ACL* double-pass system works

Partial calcining and dust reclamation take place as hottest gases pass through pellet bed on traveling grate. Gas temperatures are reduced from about 1800 to 500 degrees in this first pass (A to B). Next, gases pass through cyclones where larger dust particles are removed, and carried back to pelletizer. Final dust filtering takes place as gases pass through moist pellets on feed end of grate. In the second pass (C to D) gas temperatures are reduced more. Heat of kiln gases is transferred to material.



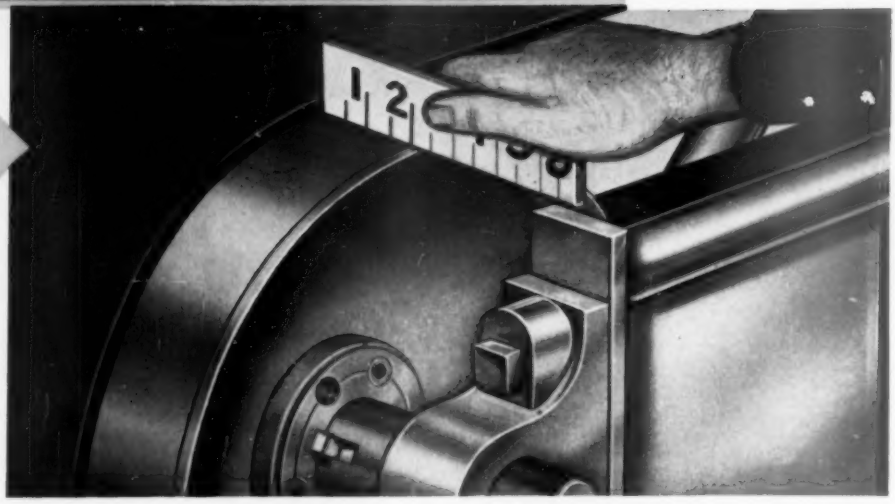
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Washington Letter

Edgar Poe

Record-high Construction Program

Never before in history has the construction picture been any brighter than in 1959. For the first time since the beginning of the nation, the total construction program is expected to exceed the $70-billion mark. Government economists and leaders in the construction industry with headquarters in the nation's capital agree that indications are this will be a record year for building. Industries in the rock products field should have one of their greatest years.

New construction is expected to reach $52.3 billion and maintenance and repairs are expected to amount to an additional $18 billion.

A boom year for housing and highway construction is predicted. The Department of Commerce and the Department of Labor said that $50 billion of new construction this year not only would set a new record for construction value, but a new physical volume.

An estimated 1,200,000 new homes will be started as compared with 1,170,000 in 1958. Also, many new office buildings, schools, shopping centers and churches will be constructed. For years the official forecasts by the Department of Commerce have chalked up a high accuracy rating. For instance, the estimated 1958 construction activity was only one-half of one percent less than the figure forecast by the Commerce and Labor Departments in the closing weeks of 1957.

Interstate Road links To open

For the first time since the accelerated highway program was authorized by Congress in 1956, millions of American motorists by the end of 1959 are going to be able to see and to drive on links of new multi-laned, stoplight-free highways. It will still be several years before those links are joined into great ribbons of superhighways connecting the various states.

The 1958 calendar year witnessed the expenditure of approximately $6.2 billion in capital outlays. This represents expenditures for federal, state and local highways. Engineering and rights-of-way are included but the construction component represents about $5.1 billion.

The Bureau of Public Roads estimates that the total capital outlay this year will amount to about $7 billion, and the construction component will total $5.7 billion, or $600 million more than 1958.

Road money Shortage

Not everything is bright for the future of the Interstate Highway program of 41,000 authorized miles. The big immediate road question facing the new Congress is: Where is the money coming from after this year if the accelerated pace is to continue? There will be some Interstate System funds, but not nearly enough to keep the program moving.

Under the 1956 Highway Act, the primary, secondary and urban roads have the priority over the federal funds. These programs are expected to continue without interruption. However, slim pickings are in sight for the Interstate System unless more funds are found.

Ike opposes Deficit Financing

President Eisenhower has declared flatly that he will vigorously oppose any additional deficit financing in view of the $12-billion deficit facing Uncle Sam June 30. Some members of Congress favor using the $1 billion of excise tax collected on new motor vehicles, which has gone directly in the general fund rather than into the Highway Trust Fund.

The other alternative is raising the 3-cent federal gasoline tax another 1 or 1½ cents a gallon. The American Automobile Association and some other groups have flatly gone on record in opposition to further increasing the gasoline tax. A number of states are already proposing to raise their gasoline tax from 1 to 2 cents a gallon to provide their share of funds on the Interstate System and the

primary, and secondary roads. Many municipalities likewise are proposing to levy an additional tax on gasoline.

Pay-as-you-go Provision During the 1958 session of Congress the Byrd pay-as-you-go provision in the Highway Act was lifted for the 1959 and 1960 fiscal years. After that, unless there are further amendments, the provision will again be invoked.

Senator Harry F. Byrd of Virginia is often described as the "watch dog" of the United States Treasury. He is chairman of the powerful Senate Finance Committee where all tax legislation goes after it receives House approval. Under the Constitution all tax legislation must originate in the House of Representatives. Representative Wilbur D. Mills of Arkansas retains the chairmanship of the House Ways and Means Committee, where new tax measures have their inception.

Unions help Elect dozen New senators The dozen new senators (all Democrats) labor is taking credit for helping to elect are: Harrison Williams of New Jersey; Clair Engle of California; Eugene J. McCarthy of Minnesota; Stephen M. Young, Ohio; Thomas J. Dodd, Connecticut; Vance Hartke, Indiana; Gale N. McGee, Wyoming; Philip Hart, Michigan; Howard W. Cannon, Nevada; Frank E. Moss, Utah; Jennings Randolph and Robert C. Byrd, both of West Virginia.

Labor, flushed with victory, is aiming to get as many state right-to-work laws repealed as possible. The largely agricultural state of Kansas was the only one, of the half-dozen states where the issue was up, to adopt the proposal at the 1958 general election.

To push new Reform laws All indications are the new Congress will be marked with some bitter debate growing out of proposed legislation designed to end monopolies in labor unions, and stop union corruption and abuses. The Eisenhower administration insists that the so-called reform legislation it will push in Congress will include provisions designed to stamp out labor's use of secondary boycotts and blackmail picketing.

To repeal a state's rights to adopt a right-to-work law would require an amendment to the Taft-Hartley Act. That will be one of the major aims of AFL-CIO.

Some of the other proposals will include: Grant low interest loans for public works to municipalities, and give depressed communities other federal aid; offer federal aid for school construction; let the Tennessee Valley Authority issue its own bonds; step up housing through aid to private home builders, as well as public housing, slum clearance and urban renewal.

Right-to-work Law in South There are now 19 states which have outlawed compulsory union membership. Of course, not all state laws are uniform by any means. However, the paramount issue—a working man does not have to belong to a union in order to hold a job—is the same.

The South has more right-to-work laws on the statute books than all the rest of the country together. Only in Louisiana, of the 11 Southern states, has the law been repealed. That was done a couple of years ago with the aid of Governor Earl K. Long who had labor's support to get elected.

Outside the South, the states that have right-to-work laws are Indiana, Iowa, North Dakota, South Dakota, Nebraska and Kansas in the Midwest, and Arizona, Nevada and Utah in the Far West.

No Eastern State has Work law None of the 12 Eastern states has a right-to-work law. Delaware and New Hampshire formerly had such statutes but, like Louisiana, repealed them. In the November election the Democratic gains in Indiana were attributed in part to labor's campaign to repeal the law in the Hoosier State.

Because of the election results and the defeat of right-to-work proposals in California, Colorado, Idaho, Ohio and Washington, AFL-CIO leaders have interpreted them as a mandate for liberal legislation including more federal spending, shorter work weeks, and increasing the minimum wage to $1.25 an hour.

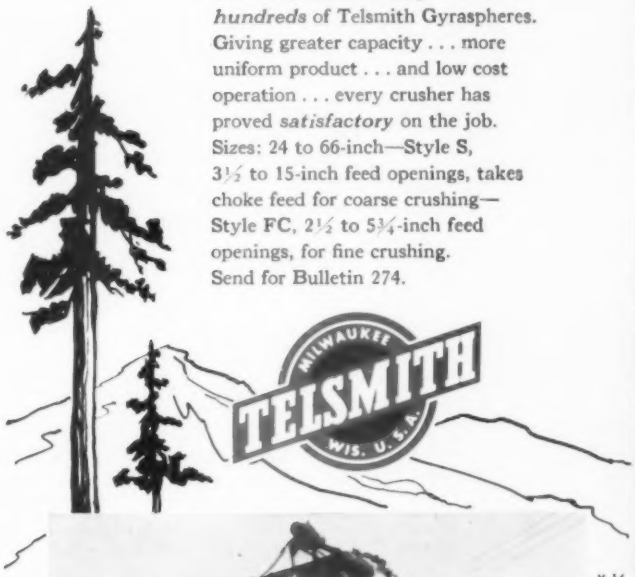
New cities May develop Major General Louis W. Prentiss, vice president of the American Road Builders Association, asserts that new opportunities are destined to result from the Interstate Highway System. Said he: "We can expect to see new cities developing along the highways in much the way that cities developed along the waterways and railways."

Although General Prentiss said that new cities may develop, established cities hold by far the strongest positions if they meet the "exciting challenges" in the developing highway system.

END

the Pacific Coast goes for GYRASPHERES®

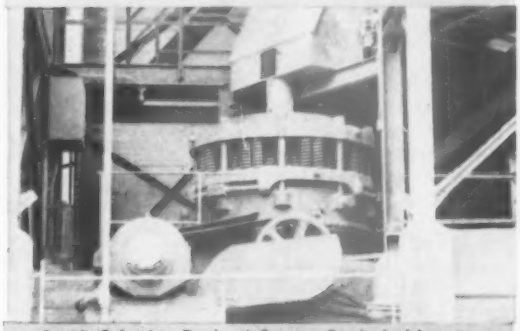
Out where the rock is really hard—there are literally *hundreds* of Telsmith Gyraspheres. Giving greater capacity . . . more uniform product . . . and low cost operation . . . every crusher has proved *satisfactory* on the job. Sizes: 24 to 66-inch—Style S, 3½ to 15-inch feed openings, takes choke feed for coarse crushing—Style FC, 2½ to 5¾-inch feed openings, for fine crushing. Send for Bulletin 274.



Y-16



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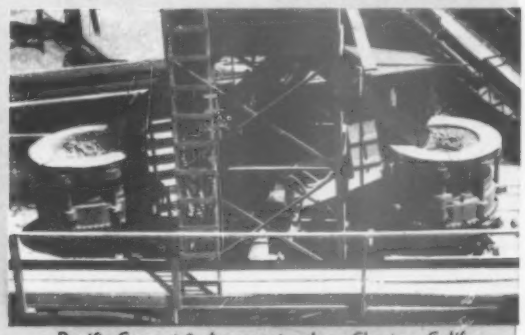
British Columbia Portland Cement Co. Ltd., Victoria, increased cement mill output with a 48-FC Gyrasphere



Two of the four Gyrasphere Crushers owned by the Associated Sand & Gravel Co., Everett, Washington



This 66-FC is one of seven big capacity Gyraspheres owned by Rogers Construction Co., Portland, Oregon



Pacific Cement & Aggregates, Inc., Clayton, Calif., has a very efficient pair of 36 Gyraspheres

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How would you decide?

A round-up of actual day-to-day in-plant problems and how they were handled by management men

Can you deny promotion without giving man a trial?

What Happened: When a vacancy came up in the department, a man was hired from the outside. Ed Blue, who had seniority, felt that he was not given proper consideration. He approached his supervisor, who said: "Ed, you know we like to promote from within, but I considered your qualifications and I don't feel you're heavy enough for this job. It requires a lot more background than you have."

"I think I have the background," Ed insisted.

"Okay, let's see if you have," the supervisor replied, and right on the spot he asked Ed a lot of technical questions.

Ed's answers were very confusing. "See, I told you," the supervisor said. "You just don't have the right qualifications for the job."

But Ed still didn't agree. He filed a grievance and the case went to arbitration. The company defended its action on the grounds that Ed's qualifications were considered and found wanting. Ed insisted that he could do the work and that the oral test which was given to him had made him nervous. "Why don't they try me out for a couple of weeks? Then they could find out if I'm good or not. That's fair enough, isn't it?"



The company insisted that its judgment was correct, and that if they gave Ed a trial and he didn't make good, all that production would go to waste.

Was the company:
Right? ☐ **Wrong?** ☐

What Arbitrator Dworet ruled: "The oral test given to Ed Blue on the spur of the moment was not a true indication of his ability. Blue had every right to feel that he should be given an opportunity at the job primarily because he was already an employe, and he had the background to be trained for the job. Almost every promoted person must be trained for the job, and only then can a proper determination be made regarding a man's qualifications and aptitude. Nothing in Blue's previous record indicated that he didn't have the qualities. He should be given a trial."

Each incident given in this department is taken from a true-life grievance which went to arbitration. Names of some principals involved have been changed for obvious reasons. Readers who want the source of any of these cases may write to *Rock Products*.

To save money, can you refuse to fill a temporary vacancy?

What Happened: When Joe MacDonald called his supervisor one morning and said he couldn't report for work for a couple of days, the foreman decided not to assign anyone else to do the job. He figured that the work could be done later without disrupting the production schedules.

A junior man, who was on layoff, heard about this and filed a grievance. He claimed that MacDonald's was a regular job, part of a group operation, and that the supervisor should have called in a replacement.

The company argued that it had a right to schedule jobs and to decide when and how certain work was to be done. There was nothing in the company's rules that promised employes that temporary jobs MUST be filled immediately.

Was the Worker:
Right? ☐ **Wrong?** ☐

What Arbitrator Abernethy ruled: "In the absence of a clear agreement requiring the company to keep a job staffed at all times, the company must be held free to determine whether or not a vacancy such as this must be filled. Grievance denied."

(Continued on page 28)

These Special Excavating Jobs Are Best Handled by Sauerman DragScrapers

Deep Digging

900-FT. SPAN— 65 FT. BELOW WATER...



Load is deposited by tensioning the track cable, thus lifting the DragScraper from the pile. Tensioning continues to the desired height for releasing the DragScraper and returning it by gravity to the pit.



Operator controls digging and hauling from cab in head tower.

"the 10-yd. DragScraper is doing a wonderful job and we could not operate without it..."

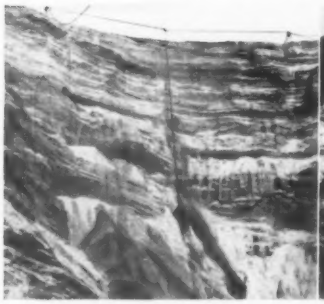
Louis Chinelli, Gen. Supt. Redman Concrete Corp.

Redman had been trucking material at a cost of $35,000 a year to the location where the DragScraper is now placing it. The 10-yd. Sauerman covers a pond area of 1500′ by 3000′ and is digging 40 ft. deeper than their previous dragline could operate.

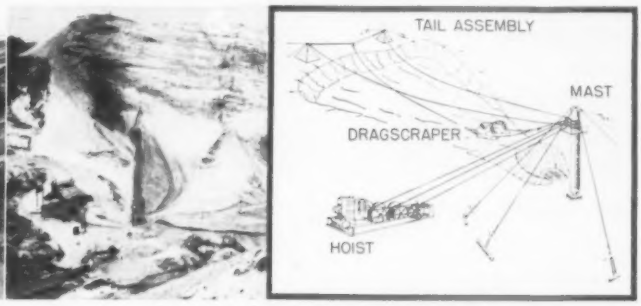
The DragScraper digs and hauls on a 900-ft. span. It operates between a 90-ft. fixed head tower and a 40-ft. mobile tail tower which may be shifted to change the line of operation. The company's 1000-yd.-per-day batch plants and its fleet of mixers and trucks are kept busy by the steady flow of material supplied by the DragScraper.

High Bank Digging

175 FT. HIGH— 600-FT. HAUL...



DragScraper digs from high bank.



Overall view shows height and steepness of bank. Diagram shows details of Sauerman installation.

"I have nothing but praise for our 4-yd. Sauerman Machine. Since the DragScraper began operations in 1952, we have worked it continuously 12 hours a day..."

John D. Robertson, Gen. Supt. Chandler's Palos Verdes Sand & Gravel Co.

By working down from the top of the 175-ft. bank, the material flows ahead of the DragScraper. This provides bonus loads on each haul and substantially lessens the danger of cave-ins.

Operating cables are powered by a Sauerman three-drum electric hoist. Equipped for rapid shifting, the DragScraper can be quickly positioned to any line of operation between the two tail towers at the top of the bank and the headpost at the hopper.

The plant is the largest sand producer in the South Los Angeles area and, together with two ready-mix plants, keeps 22 ready-mix and 18 dump trucks busy.

The best Sauerman Machine for your plant is governed by the nature of the deposit, location of material, the depth nd plant layout. Consult Sauerman engineers about your plant. Their recommendations will be based on fifty years of excavating machinery experience. Ask for Catalog A (DragScrapers). Sauerman News Nos. 149 and 150 describe the above installations in greater detail.

SAUERMAN BROS. INC. 630 SOUTH 28TH AVENUE • BELLWOOD, ILLINOIS

CRESCENT SCRAPERS • SLACKLINE and TAUTLINE CABLEWAYS • DUROLITE BLOCKS

Enter 1457 on Reader Card

Labor Relations *continued from page 26*

Can a man refuse a task outside his classification?

What Happened: When toolroom foreman Williams asked Harry Bennet to clean up a broach so that the toolmakers could work on it, the worker balked. "I've never done this kind of asking you."

"I think I better see my committeeman before I do anything like this," was Harry's answer.

"I need this job done right away,"



work, and I feel that you shouldn't ask me to work out of classification."

"That's right, Harry," the foreman replied. "You never did it before, but this work is not too much out of line with what you've been doing. I don't have a man around to do this, so I'm

the foreman countered, becoming a little peeved. "See him later if you still feel I don't know my business."

"No," insisted Harry. "I'm not going to do a stitch of work until I get my rights cleared up."

Harry was laid off for the rest of the day. When the case came to arbitration, he told the arbitrator:

1. I know that a foreman's order must be obeyed, but not when he asks me to work outside of my classification.
2. I didn't disobey—I just wanted to get more information from my committeeman.

Foreman Williams had his say, too:

1. I've been around for 20 years and I know whether the assignment I gave is right or wrong.
2. Besides, even if I were wrong, Harry should have obeyed and grieved later.

Was the foreman:
Right? ☐ Wrong? ☐

What Arbitrator Haughton ruled: "The underlying issue in this case is whether or not an employe must accept an assignment from his foreman even though he sincerely believes it is outside his classification. Unless it is detrimental to his health or safety, he must accept it. Another modification would be when a skilled craftsman is assigned a work wholly different and unrelated to his classification. Except in these circumstances, assignments which allegedly violate classification lines should be accepted, and protests filed through the grievance procedure. There was no valid claim that the protested assignment was detrimental to health or safety. It was generally within the skill level of the work required by his classification. The grievance is denied."

Can you discipline a union official more severely than others for same offense?

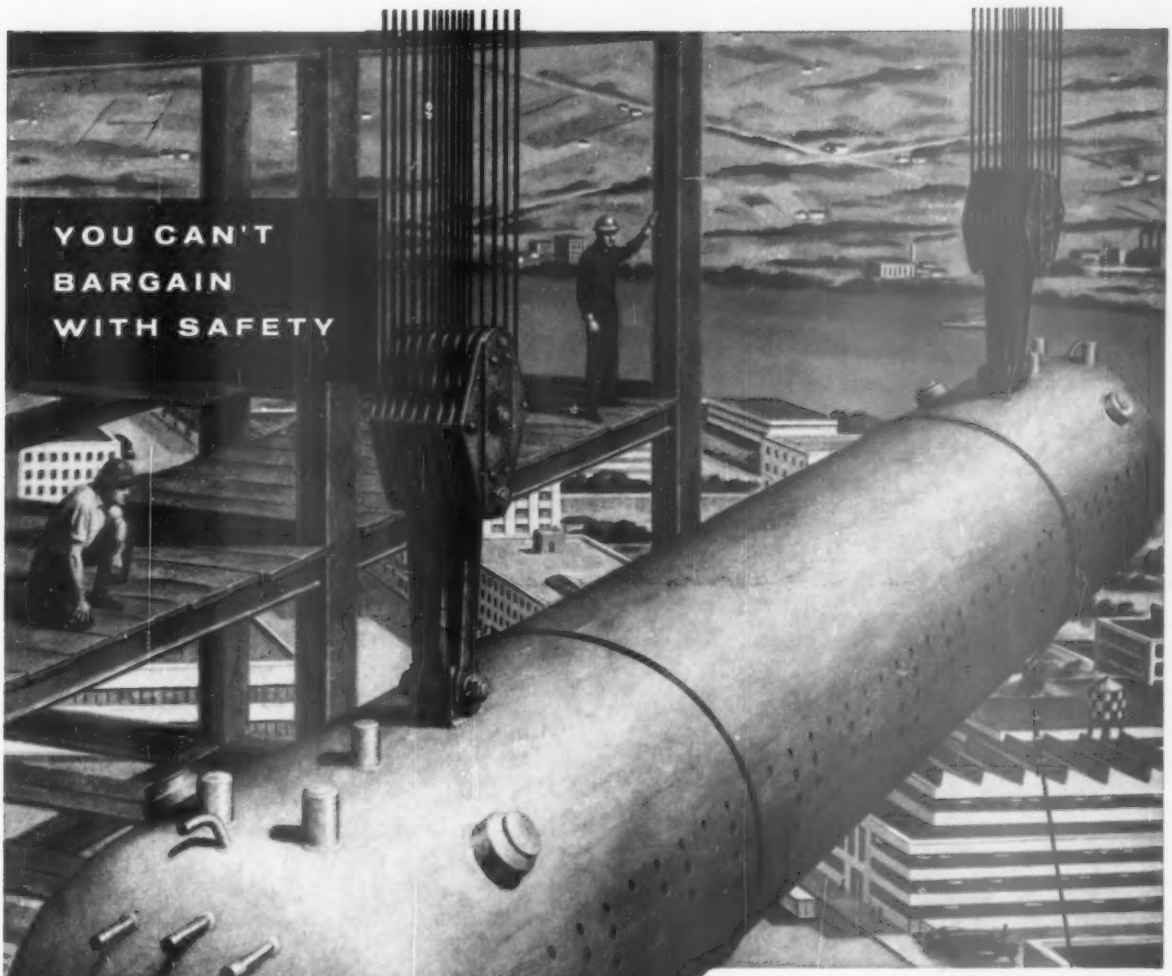
What Happened: There was grumbling in the department when the company posted a new schedule for maintenance men. The shop steward told the supervisor that the workers didn't like the idea of being scheduled for Saturday work. The supervisor explained the reason behind the new schedule. But that Saturday three workers didn't show up. Among them was the shop steward who phoned he had important shopping to do.



When the steward returned on Monday, he was given a three-day layoff. The other two (who also registered opposition to the new schedule) were given written warnings. The steward complained that he should NOT be given a bigger penalty than the others. The company felt that he SHOULD because he has a greater responsibility to obey rules than other employes. Because of the tense situation over the new schedules, the company felt that the steward should have made it a point to come to work on that Saturday, even though he may have had personal reasons for staying home.

Was the company:
Right? ☐ Wrong? ☐

What Arbitrator Howlett ruled: It is clear from the evidence that had the grievant NOT been a union leader, his penalty would have been less severe. His record was good and it appears almost certain that under the company policy he would have received a reprimand and not a suspension. Union officials do have responsibilities greater than those of rank and file employes. They have a duty to act affirmatively to prevent or end a work stoppage, as well as to refrain from violating a no-strike pledge. But the grievant was not disciplined for either malfeasance or non-malfeasance as a union official. He did not urge other employes not to go to work on Saturday. His failure to appear for work, while wrong, was solely that of an individual employe. It had no relationship to his duty as a member of the Shop Committee. The union official's greater responsibility does not apply to his acts which have no relationship to his union position. The mayor, driving his private automobile above the speed limit, should not suffer a heavier fine (and also not a lesser one) for his dereliction than a citizen who does not hold public office. This is true even though we may expect the mayor to set us a good example." **END**



This 240,000-pound steam drum, built by Combustion Engineering for a large generating plant, is here being hoisted 120 feet into position by strong wire rope. It's a striking example of how . . .

safety rides on quality wire rope

You may never hoist loads as large as this 120-ton drum. But *safe, top quality wire rope is just as important to your own operations.* For, although the price of a "bargain" rope would be less, failure of such a rope could cost you thousands of dollars in wrecked equipment. Don't be a victim of false economy. Buy a wire rope that's a quality rope—buy Wickwire Rope.

5339

WICKWIRE ROPE — A CF&I PRODUCT

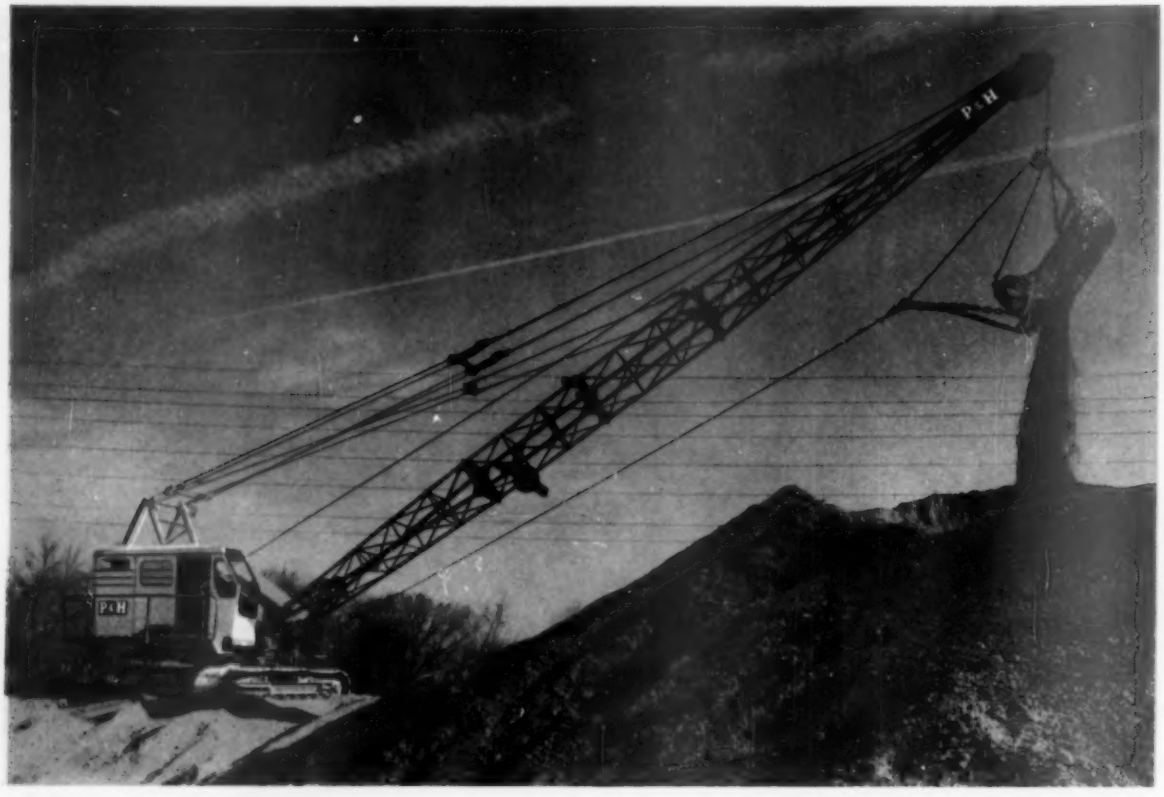
CF&I

LOOK FOR THE YELLOW TRIANGLE

PRODUCT OF WICKWIRE SPENCER STEEL DIVISION
THE COLORADO FUEL AND IRON CORPORATION

THE COLORADO FUEL AND IRON CORPORATION—Albuquerque • Amarillo • Billings • Boise • Butte • Casper • Denver • El Paso Farmington (N. M.) • Fort Worth • Houston • Kansas City • Lincoln (Neb.) • Odessa (Tex.) • Oklahoma City • Phoenix • Pueblo Salt Lake City • Tulsa • Wichita • **PACIFIC COAST DIVISION**—Los Angeles • Oakland • Portland • San Francisco • San Leandro Seattle • Spokane • **WICKWIRE SPENCER STEEL DIVISION**—Boston • Buffalo • Chattanooga • Chicago • Detroit • Emlenton (Pa.) New Orleans • New York • Philadelphia

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P&H DIESEL POWER
produces "profit-tons"



2-cycle P&H Diesels are available in 2, 3, 4 and 6 cylinder models from 40 to 280 H.P.

Owners and operators everywhere are enthusiastic about the P&H Diesel powered 1½-yard P&H 655B Dragline. They have found that this 4 cylinder P&H Engine reduces cost per ton because it has all of the needed power—the quick response for fast swings—the simplicity of design to make servicing quick and easy.

A rugged, heavy-duty engine with high torque, the P&H Diesel provides the power to really dig in and do a days work. It operates best on No. 2 fuel oil and burns less of this low cost fuel. 25% fewer parts and all wearing parts interchangeable assure low maintenance cost. With the simplified P&H fuel injection system *one adjustment times the entire engine.*

For all your sand and gravel equipment—including rock crushers, clamshells and front end loaders—specify the one diesel with all the features that increase production and lower tonnage cost—P&H Diesel! See your P&H dealer or write for "Power For More Profit," Bulletin Z-26.

HARNISCHFEGER

P&H Diesel Engine Division
Crystal Lake, Illinois

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PEOPLE IN THE NEWS

McKeagney named New Haven field engineer



ROBERT B. MCKEAGNEY has been appointed field engineer for The New Haven Trap Rock Co., New Haven, Conn. An authority on highway design and construction practices, airfield design and materials control, Mr. McKeagney has served for the past five years as managing engineer of the Asphalt Institute, directing all engineering and administrative work in the 20 states along the east and gulf coasts of the United States. Previously he served with the U. S. Army Engineers at Boston, Norfolk and Richmond, advancing to chief of the geology, soils and paving branch, where he was responsible for supervision of design and materials control of airfield construction in eastern Canada, Greenland, Iceland, Bermuda and the Azores.

A native of Milton, N. H., Mr. McKeagney graduated from the University of New Hampshire, Durham, where he majored in geology. Following graduation he studied soil mechanics at MIT.

Mr. McKeagney is a member of the American Institute of Mining and Metallurgical Engineers, Highway Research Board, American Road Builders Association, American Society of Military Engineers and the Geology Society of America.

National Slag Association elects new president

CHARLES W. IRELAND, president of Vulcan Materials Co., Birmingham, Ala., was elected president of the National Slag Association at its recent meeting in Washington, D.C. He succeeds A. W. Wood, president, Lorain Slag Co., Cleveland, Ohio, who remains as a member-at-large and member of the executive committee. Other members of this committee are Edward C. Levy, president, Edward C. Levy Co., Detroit, Mich.; W. Kenneth Dorman, manager, slag products section, U. S. Steel Corp.; and C. A. Barinowski, vice president of sales, Vulcan Materials Co.

Harris N. Snyder, president, Buffalo Slag Co., Inc., Buffalo, N. Y., was elected vice president of the association. E. W. Bauman was re-elected managing director, and W. S. Shaw, treasurer.

NMWA president

GEORGE SUDLOW, vice president, American Rock Wool Corp., Chicago, Ill., has been elected president of the National Mineral Wool Assn.

Ideal promotions affect Hooton, Brown and Straight



W. E. Brown | A. W. Hooton | H. Straight

A. W. HOOTON has been appointed Pacific regional production manager of Ideal Cement Co., Denver, Colo., which has been expanded to include the Trident, Mont., and Devil's Slide, Utah, plants. Formerly Rocky Mountain regional production manager, Mr. Hooton will be succeeded by Horace Straight, who has been serving as plant manager at the Florence, Colo., plant. This region comprises the Boettcher and Portland, Colo., Ada, Okla., Superior, Neb., and Houston, Texas, plants.

Warren E. Brown, formerly plant manager at the San Juan Bautista, Calif., plant, has been transferred to the Portland plant as manager.

Mr. Hooton replaces E. F. Bollinger, who has resigned. Prior to his appointment as Rocky Mountain regional production manager, Mr. Hooton was plant manager of the Portland, Devil's Slide and Mobile plants. He is a graduate of the University of Washington, Seattle, Wash., with a degree in chemical engineering.

Mr. Straight, who is also a graduate of the University of Washington, was assistant plant manager and then plant manager at Devil's Slide before transferring to the Portland plant in 1956.

Mr. Brown was chief chemist, general foreman and assistant plant manager at the Baton Rouge, La., plant before his promotion to plant manager at San Juan Bautista in 1956. A native of Canon City, Colo., and a graduate of the University of Denver with a degree in chemical engineering, Mr. Brown started his career with Ideal in 1948 as a chemist at the Portland plant.

(Continued on page 32)

PEOPLE IN THE NEWS

(Continued from preceding page)

Trap Rock director resigns

GERALD M. BOYLE has resigned as a director and vice president of sales and transportation of the New York Trap Rock Corp., West Nyack, N.Y. Activities of the sales department will be handled by Joseph A. Dooley, sales manager, until a successor to Mr. Boyle has been appointed.

Named vice president

WALTER R. COOK has been named vice president of Texas Industries, Inc., Dallas, Texas. He is also vice president of Redondo Tile Co., a California subsidiary of Texas Industries. Mr. Cook joined the company in 1955 as management coordinator.

Gypsum sales representative

FRANK W. WILKERSON has been named Intermountain area sales representative for Kaiser Gypsum Co., Oakland, Calif.



Warren Dobbins Kennedy

Cris Dobbins named PCA board chairman

CRIS DOBBINS, president, Ideal Cement Co., Denver, Colo., has been elected chairman of the board of directors of the Portland Cement Association, Chicago, Ill. He is pictured receiving the congratulations of George E. Warren, president of Southwestern Portland Cement Co., Los Angeles, Calif., who has served as chairman for the past two years, and G. Donald Kennedy, PCA president. Mr. Dobbins has been a member of the board of directors and has served on various PCA committees since 1948.

New directors elected by PCA are Charles Baumberger, Jr., president, San Antonio Portland Cement Co., San Antonio, Texas; Ben W. Calvin, president, Aetna Portland Cement Co., Bay City, Mich.; Richard A. Grant, executive vice president, California Portland Cement Co., Los Angeles, Calif.; and Arizona Portland Cement Co., Rillito, Ariz.; M. E. Grunewald, president, Coplay Cement Manufacturing Co., Coplay, Pa.; R. D. Raff, president, Diamond Portland Cement Co., Middle Branch, Ohio; Erik Thune, president, National Portland Cement Co., Philadelphia, Pa.; Walter H. Wulf, president and general manager, Monarch Cement Co., Humboldt, Kan.; B. F. Cox, vice president, British Columbia Cement Co., Ltd., Victoria, B.C., Canada; and H. B. Robeson, president, Nazareth Cement Co., Nazareth, Pa.

Bessemer superintendent

MARSHALL H. WINKLER, formerly chief engineer, has been appointed general superintendent of The Bessemer Limestone and Cement Co., Youngstown, Ohio.

Heads Division of Mines

DR. IAN CAMPBELL of the California Institute of Technology, Pasadena, Calif., has been appointed chief of the California Division of Mines, succeeding Dr. Olaf P. Jenkins, who retired in March of 1958. Dr. Campbell is presently executive officer of the Division of Geological Sciences at the California Institute of Technology, where he also serves as professor of petrology and industrial minerals.

(Continued on page 37)

OBITUARIES

W. Carlisle Cooper, superintendent of the Henderson, Ky., plant of Bedford-Nugent Co., Inc., Evansville, Ind., died recently at the age of 72.

Thomas McDonald, Sr., retired chief engineer at the Speed, Ind., plant of Louisville Cement Co., Louisville, Ky., died October 16. He was 66 years old and had served the company for 38 years at the time of his retirement on October 1.

Herbert Buckley Allen, retired district sales manager for the General Crushed Stone Co., Easton, Pa., passed away October 23. He was 77 years of age. Mr. Allen had served the company as district sales manager for 42 years prior to his retirement in 1950.

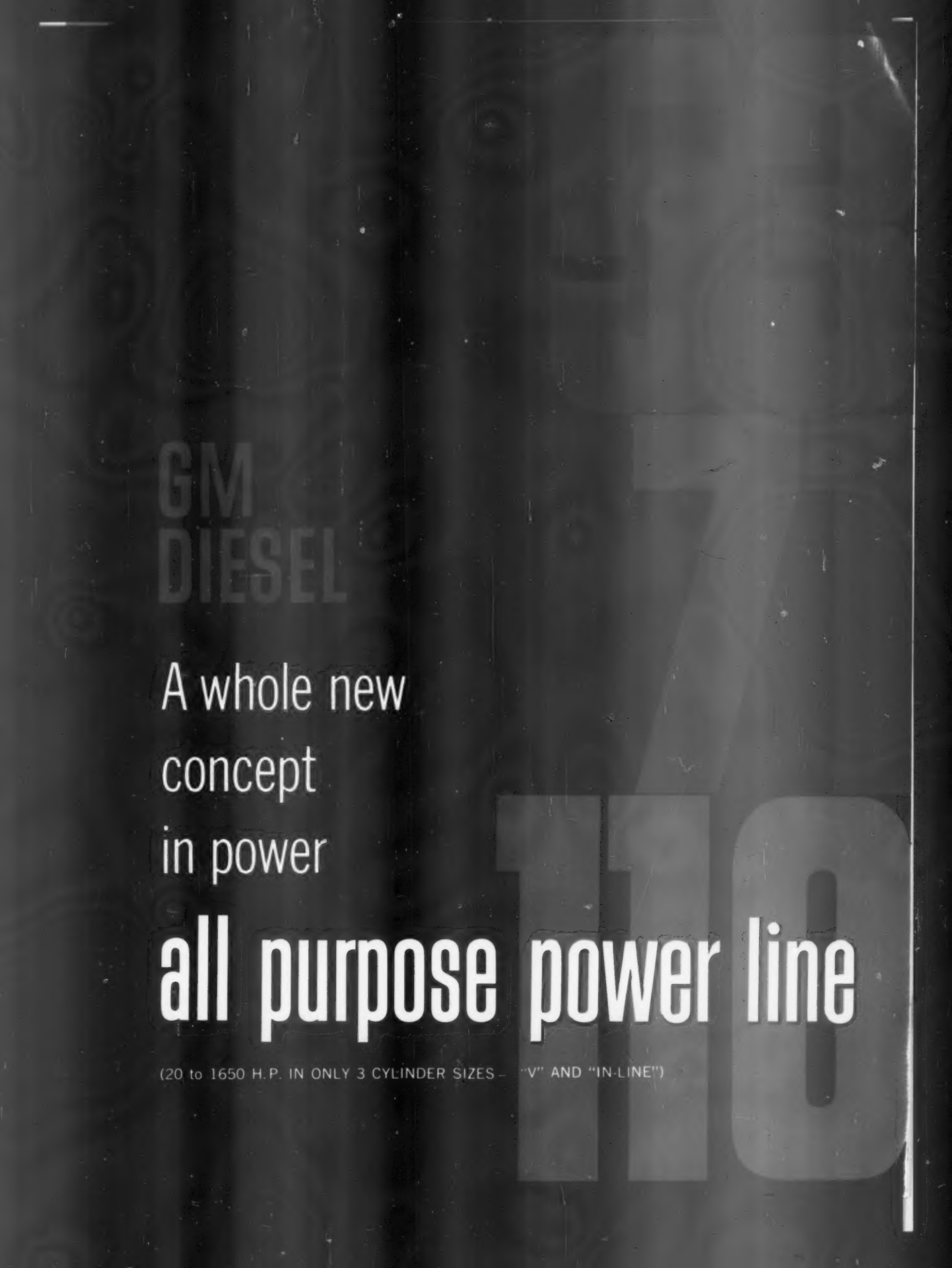
Carl D. Kraft, owner of the Ventura County Sand Co., Ventura, Calif., died October 26. He was 38 years old.

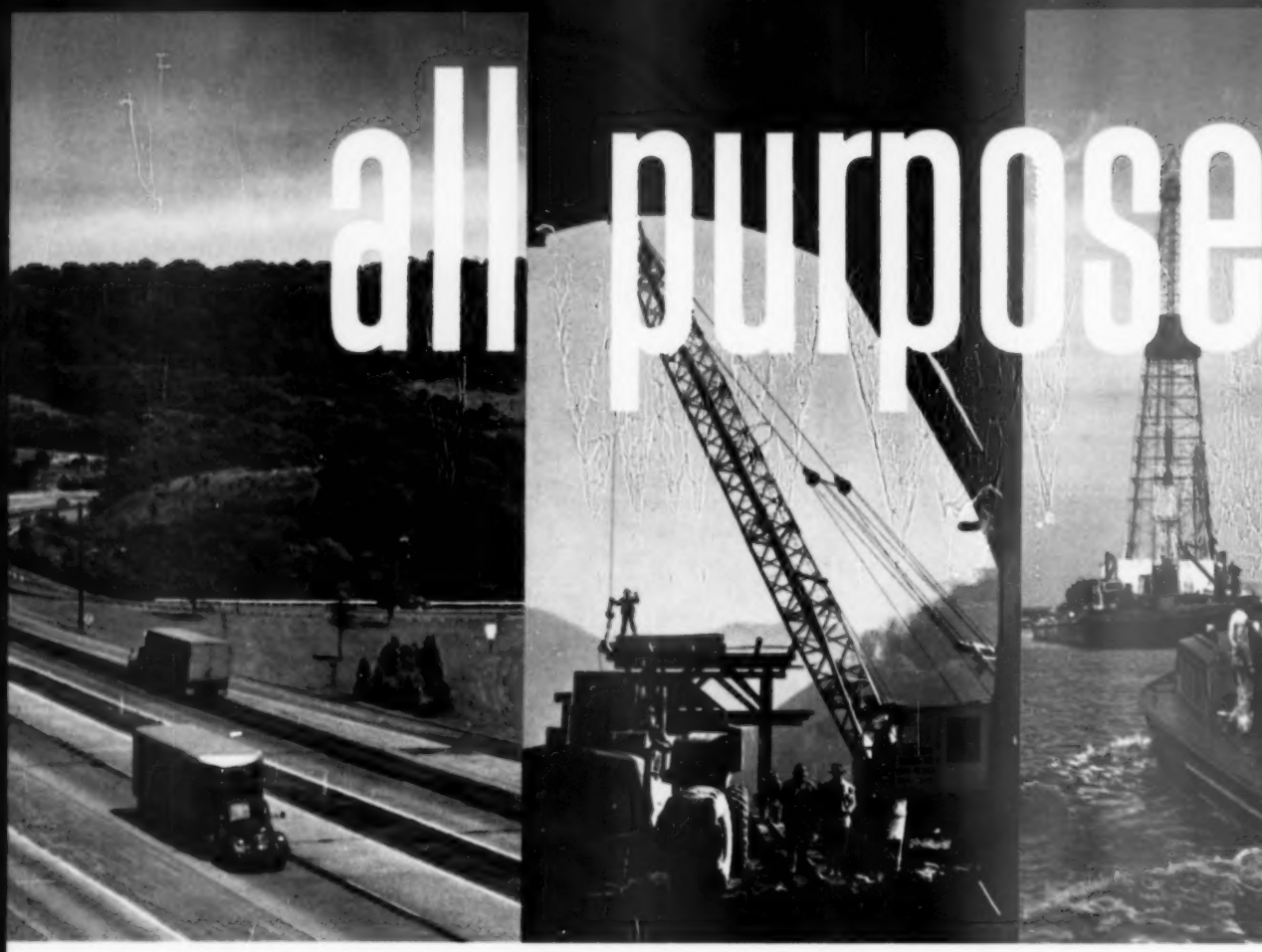
Harold A. Butz, treasurer of Lehigh Portland Cement Co., Allentown, Pa., died October 18.

Charles Donovan Smith, II, president and treasurer of the Memphis Stone & Gravel Co., Memphis, Tenn., died November 3 at the age of 40. He was president of the Tennessee Sand and Gravel Association, and was also active in the National Sand and Gravel Association. Mr. Smith's father, the late Walter Lane Smith, was founder and president of the Memphis Stone & Gravel Co., and was also one of the founders of the National Sand and Gravel Association.

A naval hero of World War II, Mr. Smith graduated from the United States Naval Academy, Annapolis, Md., in 1940 and six months later joined the cruiser Houston in the Philippines area. When the Houston was sunk in the Java Sea in 1942, Ensign Smith gave his life preserver to an injured sailor and swam 10 miles to shore. He was captured soon after by the Japanese and spent three and a half years in prison camps. For valor during the sinking of the Houston, Mr. Smith received the Silver Star and the Bronze Star. Following the war, he continued as an active Naval Reservist and at his death held the rank of captain.

DeWeese Wood Dilworth, a director of The Carbon Limestone Co., Lowellville, Ohio, passed away on November 5. He was 69 years old and had attended a recent meeting of the board of directors.


GM
DIESEL
A whole new
concept
in power
all purpose power line
(20 to 1650 H.P. IN ONLY 3 CYLINDER SIZES – "V" AND "IN-LINE")



GM Diesel combines 8 New Basic "V" and "in-line" engines with

To help industry fill its power needs, GM Diesel engineers have developed the most comprehensive power concept since they pioneered the small 2-cycle Diesel.

Using only 3 cylinder sizes, they have more than doubled the number of basic engines – vastly increased the horsepower range – yet maintained the family relationship and parts interchangeability for which GM Diesels are famous.

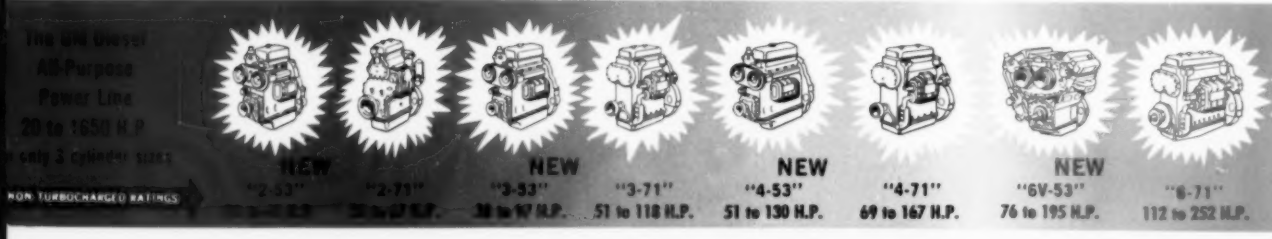
Each engine features the ultimate in *compactness, light weight, high efficiency, durability and inexpensive maintenance.*

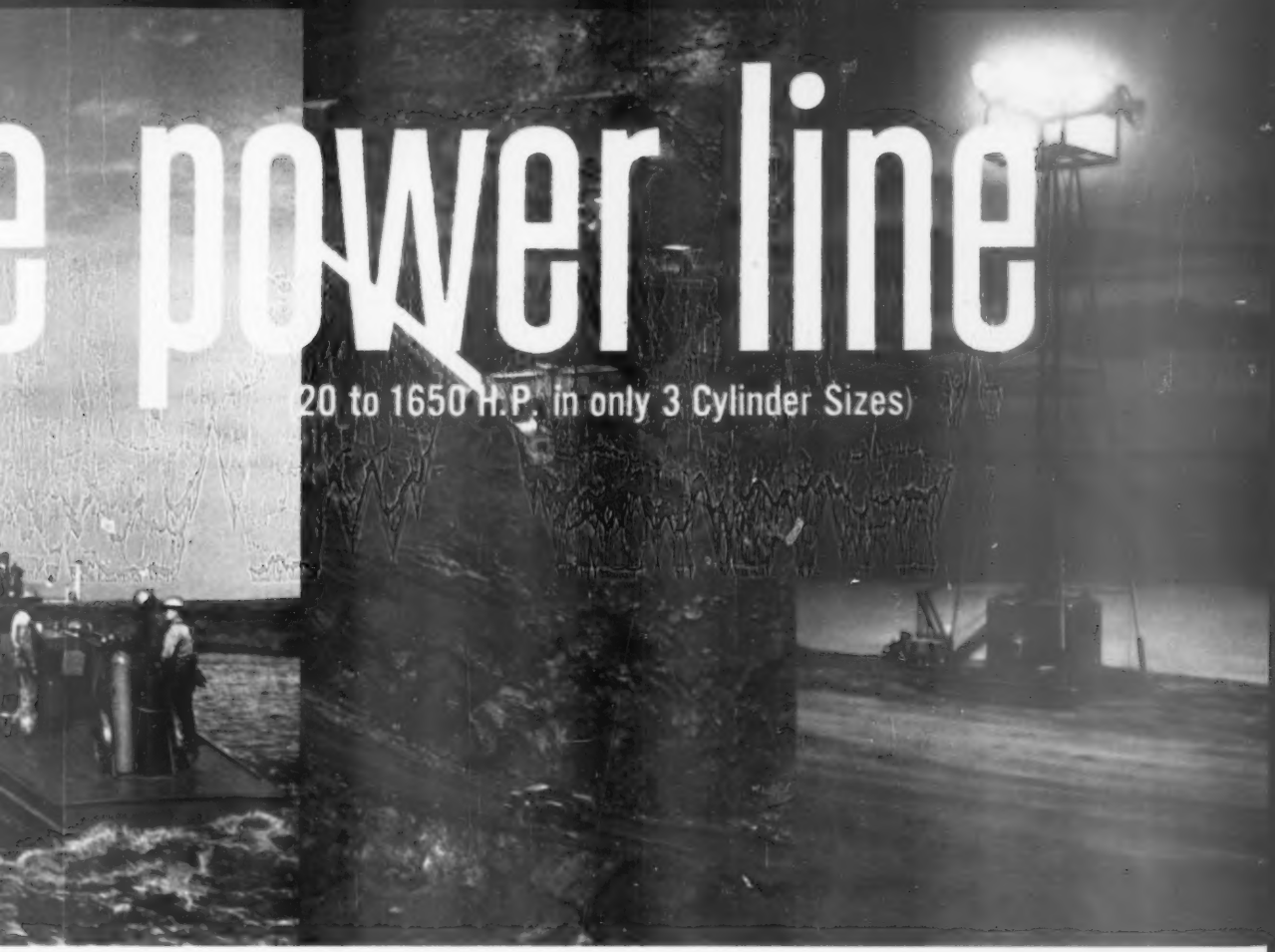
Basing their design on that of the versatile and capable GM Series 71 Diesel, GM Diesel engineers have created 8 new basic "V" and "in-line" engines which will add vastly new power coverage to the present Series 71 and 110.

First, the new Series 53 Diesel—comprising four basic "V" and "in-line" engines—is a smaller, more compact version o the famous "71."

Here, at last, in the Series 53, are Diesels which cover the lowe horsepower ranges as never before. They hurdle the barrier which have limited the use of Diesel power in a whole host o applications. They offer new opportunities for Diesel power t farmers, boatowners and industrial users by making available GM Diesels particularly suited to their needs. They will pay for themselves amazingly fast when they take over from gasoline engines.

Four new "V-71" engines complete the additions—widen the power range of the "in-line" 71 Series—set new standards fo low weight and small size per horsepower. These "V-71"





vith its proved "Jimmy" Diesels

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V-71"

engines bring far more power than ever before possible to the big brutes of the construction, mining, petroleum, logging and marine industries—up to 1650 H. P. when turbocharged.

Production has started and complete programming has been established on all new engines. Non-turbocharged engines will be available first, followed later by Turbopower models to complete the power range.

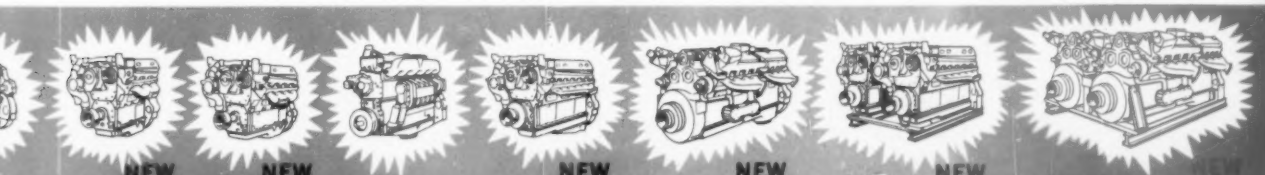
So—now more than ever before, it pays to standardize on GM Diesel power. For whatever you want a Diesel to do, there's a GM Diesel to do it for you—faster, better, at less cost. Truly, here is a whole new concept in Diesel power—the All-Purpose Power Line. Get the full story by writing GM Diesel, Detroit 28, Michigan.



GM DIESEL

DETROIT DIESEL ENGINE DIVISION,
GENERAL MOTORS, DETROIT 28, MICH.

In Canada: GENERAL MOTORS DIESEL LIMITED, London, Ontario
Parts and Service Worldwide



NEW "6V-71" 112 to 252 H.P.
NEW "8V-71" 150 to 336 H.P.
"6-110" 160 to 335 H.P.
NEW "12V-71" 224 to 504 H.P.
NEW "16V-71" 300 to 675 H.P.
NEW "24V-71" (Twin 12) 448 to 1008 H.P.
NEW "32V-71" (Twin 16) 600 to 1350 H.P.

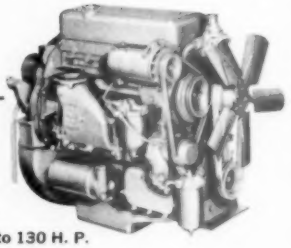
NOW...A "JIMMY" DIESEL for every power purpose

20 to 1650 H. P. in only 3 cylinder sizes

NEW SERIES 53

—smaller Diesels millions can use
2, 3, 4 and V6—20 to 195 H. P.

A scaled-down version of the famous Series 71 GM 2-cycle Diesel—identical in design principles—the new 53 Series incorporates the time-proved features of patented GM unit fuel injection and uniflow blower scavenging in more compact, lightweight units. These spacesaving engines open up whole new fields of Diesel usefulness in trucks, buses, and taxicabs, in marine service, as well as in tractors, generators, loaders, lift-trucks and many other types of industrial equipment.

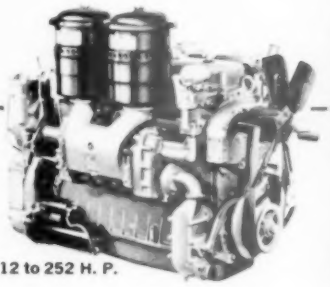


"4-53"—51 to 130 H. P.

SERIES 71 "IN-LINE"

—the versatile, time-proved economy Diesel
2, 3, 4, 6, Twin 4, Twin 6, Quad 6—33 to 1008 H. P.

Never, in industrial history, have there been Diesels as versatile and capable as the Series 71 GM Diesels—built in a wide range of Fan-to-Flywheel, Package Power, Torque Converter, Generator Sets, Economy truck engines and Turbopower models. And, because of GM Diesel's unique power concept—a family of engines featuring unequaled parts interchangeability—these time-proved "Jimmy" Diesels become even more valuable as key components of the GM Diesel All-Purpose Power Line. Today's "71" engines incorporate the results of 20 years' continuous improvement.



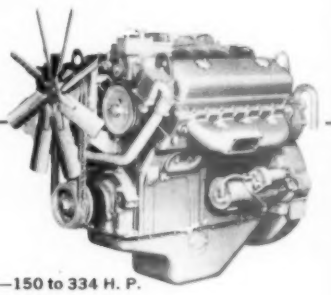
"6-71"—112 to 252 H. P.

NEW "V-71"

—higher horsepower in smaller, more compact units
V6, V8, V12, V16, Twin V12, Twin V16—112 to 1650* H. P.

The new V-71 "Jimmy" Diesels are a further dramatic illustration of GM Diesel's mighty new power concept—rounding out the All-Purpose Power Line—yet retaining the GM family relationship and parts interchangeability. Here are engines destined to give you a better investment-earnings ratio than any you have ever had before. Diesels that boast the ultimate in compactness, light weight, high efficiency, durability, inexpensive maintenance and parts interchangeability.

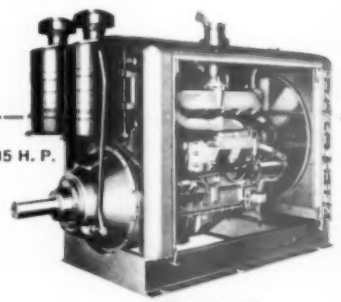
*Turbopowered



"8V-71"—150 to 334 H. P.

SERIES 110

—a favorite on heavy-duty jobs
6-110 and Twin-6-110—160 to 670 H. P.



"6-110"—160 to 335 H. P.

Renowned for its ability to get big jobs done faster at lower cost, the GM "6-110" has stepped in and taken over thousands of jobs for every kind of business—done those jobs as never before—greatly expanded the usefulness of Diesel power. Built in single- and multiple-engine units, the Series 110 engine is available for a wide variety of heavy-duty applications in earth-moving, oil-field, railroad and marine equipment.

GM Diesel
Detroit 28, Michigan
Send me detailed information on new GM Diesel All-Purpose Power Line. I am interested in new Series 53 (.....), Series 71 "in-line" (.....), new V-71's (.....), Series 110 (.....).

NAME..... TITLE.....

COMPANY.....

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In Canada: GENERAL MOTORS DIESEL LIMITED, London, Ontario



GM DIESEL

DETROIT DIESEL ENGINE DIVISION,
GENERAL MOTORS, DETROIT 28, MICH.

In Canada: GENERAL MOTORS DIESEL LIMITED, London, Ontario
Parts and Service Worldwide

Specifications subject to change without notice.

Litho U.S.A.

PEOPLE IN THE NEWS

(Continued from page 32)

S. Michigan Sand & Gravel Association elects officers

CORNELIUS N. RAY, president, Ray Industries, Inc., Oxford, Mich., was elected president of the Southern Michigan Sand and Gravel Association at its recent annual meeting. Lyle J. Walker, Walker Sand & Gravel Co., New Hudson, who is also a director of the National Sand and Gravel Association, was elected vice president; Charles Gooding, president, Whittaker & Gooding Co., Ypsilanti, treasurer; and Frank Higby, vice president, New Hudson Sand & Gravel, Inc., New Hudson, secretary.

General traffic manager

PAUL S. BARNETT has been promoted from assistant traffic manager to general traffic manager of Ideal Cement Co., Denver, Colo., succeeding the late T. C. Taylor. Mr. Barnett joined Ideal in 1951 as a rate clerk and two years later was appointed assistant traffic manager.

Medusa sales manager

ROBERT J. STUART has been promoted to sales manager of the Pittsburgh division of Medusa Portland Cement Co., Cleveland Heights, Ohio. He has been in the sales department since 1950.

PCA's Barnes promoted; succeeded by McNerney

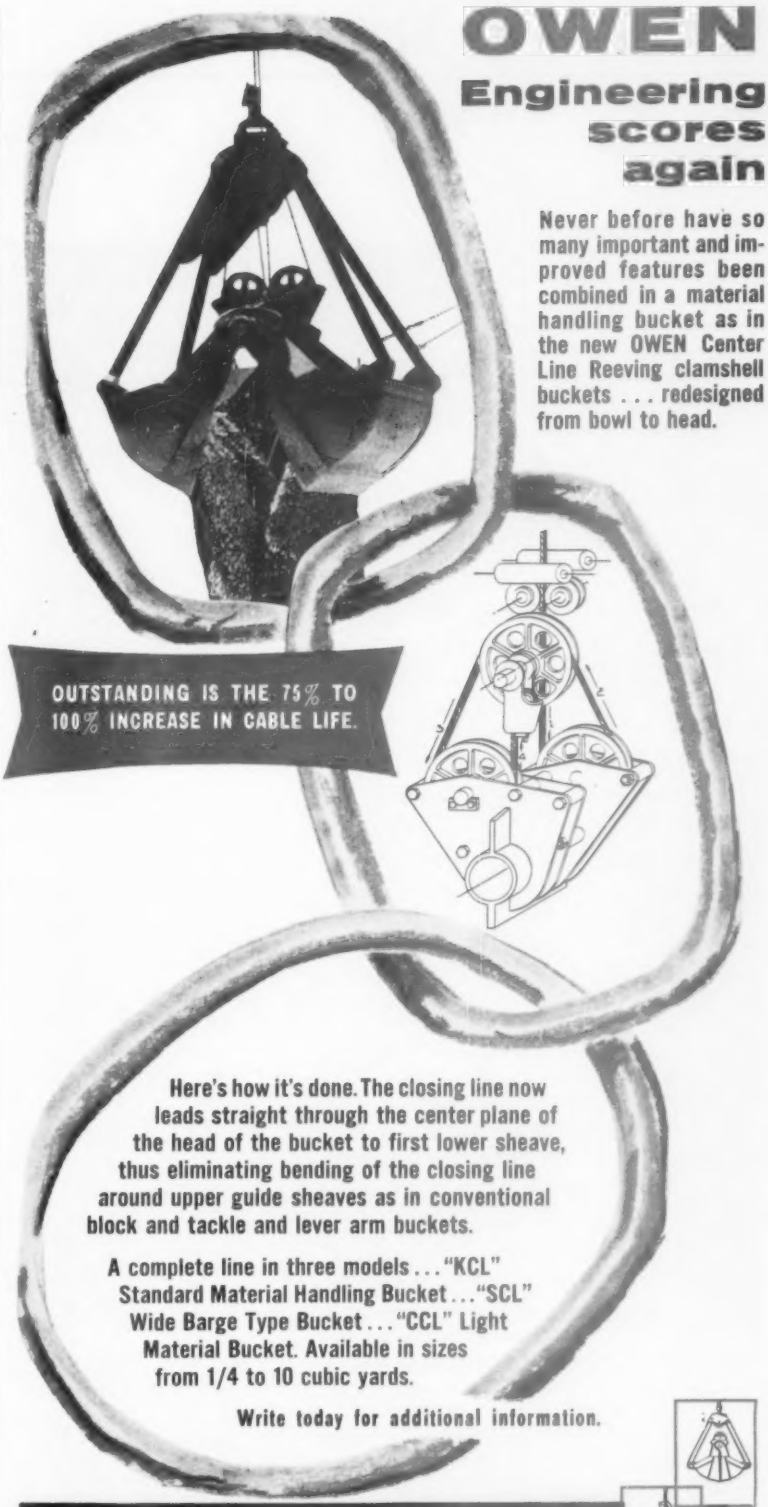
HUGH D. BARNES has been named supervisor of field promotion for the Portland Cement Association, Chicago, Ill. He was formerly manager of the western regional office in Los Angeles and will be succeeded by John M. McNerney, district engineer for the Los Angeles office.

G. Reed Grimsley retires

G. REED GRIMSLEY, a veteran of 46 years in the cement industry, has retired as special assistant to the general manager of the Columbia Cement Division, Columbia-Southern Chemical Corp., Zanesville, Ohio, after 34 years of service with the company.

General manager resigns

ROBERT VERVAEKE has resigned as general manager of the Chemical Lime Co., Portland, Ore. END



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FACES AND PLACES

. . . Candid shots of people in the



Great day at Black Lake

These men took key roles in the dedication of the new $32-million asbestos mine and mill of Lake Asbestos of Quebec at Black Lake October 16. Seated together are, left to right: R. D. Bradford, vice president of American Smelting and Refining Co. and president of its subsidiary, Lake Asbestos of Quebec, Ltd.; Hon. Maurice L. Duplessis, Prime Minister of Quebec; Rev. Fr. Nelson Roberge of Quebec, who blessed the new plant; and E. B. Cate of Montreal, attorney for Lake Asbestos of Quebec. Many guests attending the opening commended the company on its achievement and noted the significance of the industry to Canadian economy



The blast went off as scheduled

This group was on hand at Calaveras Cement Co.'s quarry to witness a successful blast of a new type of treated ammonium nitrate prills. Representing the cement company, other mining companies and the press, they saw an ammonium nitrate blast detonated without use of a high-type explosive. Standing, left to right: George C. Lindsay, ROCK PRODUCTS; *E. M. Barker, Calaveras; Mel Cooley, Spencer Chemical Co.; Lewis J. Patterson, Michigan Limestone Division, U. S. Steel Co.; E. M. Bagley, Calaveras; Rex Beals,* Mining Engineering; *L. G. Everist, Western Construction Co.; Sid Gay, Spencer Chemical Co.; William Spencer, Pittsburg & Midway Coal Mining Co.; Donald Segerstrom,* Western Mining and Industrial News; *Ed Phelps, Pittsburg & Midway Coal Mining Co.; Frank Quilici, Kennecott Copper Corp.; H. H. Everist, Western Construction Co.; L. W. Towle, Apache Powder Co.; Janet Taylor,* Mining World; *E. S. Renouard, The Anaconda Co.; Ed Borcherdt, Anaconda; Gordon McWorkman, Fred Lauer and Fred Graves, all of The J. C. Fennelly Co. The men kneeling at right in the photo are Andy Anderson of Apache Powder Co. and George Olson of Spencer Chemical Co.*



No damage done

An especially tight jam at the primary crusher in the West Nyack plant of New York Trap Rock Corp. finds George Foster, plant superintendent, right on the spot. Donald MacDonald, right, of the engineering department, is an interested spectator



They'll iron it out

In this encounter in the spic and span milling room of Monarch Cement Co., Humboldt, Kans., the discussion centers on a small problem of operating procedure. Miller W. J. Wimsett, left, talks the matter over with Joe Heenan, training director



First call to dinner

Shortly after this picture was snapped, all members attending the banquet at the National Slag Association convention in the Mayflower Hotel, Washington, D.C., were present and accounted for. Contributing to the hubbub in the East Room were, left to right, Roy J. McMindes, general manager of Sheridan Slag Co., Sheridan, Pa.; Harold W. Lynn and T. B. Tomlinson (back), both of Bethlehem Steel Co.; and W. E. Bliss, vice president, Standard Slag Co.



Presidential handshake

National Slag Association's fortunes during the coming year will be guided by Charles W. Ireland, right, president of Vulcan Materials Co., Birmingham, Ala. Here, he accepts the good wishes of outgoing president, A. W. Wood, general manager of Cleveland Slag Division, Standard Slag Co. New vice president is H. N. Snyder, left, president of Buffalo Slag Co., Inc.



reports G. A. Johnson, Salina Sand Co., Inc., Mentor, Kan.

For over ten years Salina Sand Co., Inc., has successfully employed Eagle Washing Equipment. Various units have been added from time to time. Their present modern, versatile plant is pictured. Eagle Equipment includes a double 32′ Water Scalping-Classifying Tank with automatic bleeder valves and metering "splitter" gates, two Double Screw Fine Material Washers, one 22″ x 18′ and one 36″ x 22′, and two Coarse Material Washers, one 24″ x 18′ Single Screw, and a 30″ x 18′ Double Screw. Salina's dredge with 10″ pump is equipped with a 75′ light duty Eagle "Swintek" Dredging Ladder, shown below.

With this plant they can readily meet material specifications of the state and other governmental bodies. They produce mason sand, concrete sand, cover material and road gravel. In addition to giving them the desired classifications of sand, Salina's Eagle plant thoroughly washes out clay and dirt frequently encountered in the deposit. The "Swintek" ladder on their dredge cuts costs and increases production by increasing intake of solids and by completely eliminating shutdowns from clogged suction lines.

Salina Sand Co., Inc., is happy with their Eagle Equipment — a sound investment protected by Eagle's vast experience and far-reaching service policy. Send for Catalog 58 on Washing-Classifying-Dehydrating Equipment. Catalog 83 Dredging Equipment.

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INDUSTRY NEWS

Tennesseans to develop oolite deposit

THE NEWLY FORMED Oolite Minerals Corp. has acquired mineral rights on what are said to be some of the largest oolite deposits in the nation. The deposits are located at Dover, Anderson, Cumberland City and Stewart, Tenn. Plans call for making the oolitic materials into forms of calcium for rubber and paint manufacturing and into road aggregate, self-rising compounds for meal and flour and animal feed additives. Other products will include magnesium for fertilizer and calcium fluxing stone for glass and iron. Mining and manufacturing plants will be erected at each location, the first to be at Anderson or Dover.

Officers of the corporation include John W. Gonce, president; W. A. Jones, vice president; Gerald S. Hunter, treasurer, and Mrs. Sue S. Kolbe, secretary.

FRB policy could slow building upsurge

CONSTRUCTION CONTRACT AWARDS in the three months May, June and July, 1958, were the largest in history. This rise in building activity was expected to persist into 1959. The one disquieting fact in the good news, *The Value Line Investment Survey* states, is that the Federal Reserve Board has begun to tighten up on credit. If the monetary authorities move too far too soon in restricting credit, the survey points out, such action could brake the home building industry down to a slow speed by summer.

Total new construction activity held at a high level throughout the 1957-58 recession. But the companies manufacturing the hundreds of components that go into buildings and public works projects did not fare as well as overall building figures would imply. Inventory retrenchment by dealers and price weakness in some lines compressed profit margins. But now, with field stocks for construction materials low and construction activity in a rising trend, the *Value Line Survey* notes that chances are good for a recovery in 1959. But rising interest rates could take much of the steam out of the revival in home building.



Eagle-Picher opens filter-aid plant

THE EAGLE-PICHER CO. has announced the completion of a new diatomaceous earth processing plant near Lovelock, Nev. Built at a cost of $2.5 million, the new plant will manufacture filter-aid materials.



Kiln may be largest in industry

The company discovered a diatomaceous earth deposit (top photo) near Lovelock which mining engineers have termed one of the largest and highest quality deposits uncovered in this country in the last 30 years. Authorization for the plant construction came only after an independent geological survey of the deposit and after an industry-wide marketing survey, using products from a semi-works plant constructed for this purpose. The company has placed this deposit under a long-term lease and has been carrying on heavy stripping and stockpiling activity for several months. A large supply of ore has already been stockpiled to insure a continuous flow of diatomaceous earth to the processing plant.

The plant was designed and constructed by Kaiser Engineers. Features include outside construction, an extremely compact processing area, extensive control instrumentation and what is said to be the largest kiln in the diatomaceous earth industry.

Lone Star reopens plant at Concrete, Wash.

PRODUCTION RESUMED about December 1 at Lone Star Cement Corp's plant at Concrete, Wash. Production at the plant had been shut down for several weeks because of an inventory surplus. Shipping, inventory, service, etc., continued during that period, however. Production at Lone Star's Seattle plant was not interrupted.

Japanese to build cement silos

A JAPAN-SINGAPORE joint project to erect huge portland cement silos in Singapore is being planned. The depot, capable of stockpiling 11,000 tons of cement, is expected to facilitate service and to ensure the quality of cement exported from Japan in bulk. The depot also will be used as a center to re-export the Japanese cement to Southeast Asian countries.

The Onoda Cement Co. of Tokyo, Daiichi Bussan, a Japanese trading company, and the Singapore Cement Industrial Co. have agreed to invest 600,000 Malayan dollars ($200,000) each for the projected cement center, said to be the first of its kind.

(News continued on page 44)



Their aim: *to double production without increasing overall loading costs.*
Solution: *a new 4 yard Michigan Tractor Shovel. Its regular time-record:*

60 SECONDS TO LOAD

At the Oneglia & Gervasini pit near Woodbury, Connecticut, they are loading trucks in *half the time* it ever took before!

Overall loading *costs*, nevertheless, have stayed practically the same!

Reason for this production-doubling, cost-cutting record is the new 4 yard Model 275A Michigan Tractor Shovel shown on these pages. This unit has *1½ times the bucket capacity* heretofore available in a mobile, rubber-tired Tractor Shovel. Its speed of loading has been remarkable . . .

Heaps small trucks in 20 seconds, 20 yard semi-trailers in 2 minutes

Working mostly with 10 yard, 10 wheel trucks in this 1,000-ton-per-day traprock quarry, the Model 275A has established an average load cycle of only 60 to 70 seconds *—from first pass into a stockpile 'til loaded truck pulls away.* "On our busy days," reports Supt Theodore Tietz, "we move 10-yard trucks out of our pit at the rate of one per minute." Smaller trucks generally require only 20 to 30 seconds (one pass) to load. Twenty to 24 yard semi-trailers usually take 2 to 2½ minutes (four or five passes). These records average all grades of crushed stone, all kinds of weather. In one typical time-and-motion study, for example, the Model 275A regularly dug into a half-frozen stockpile of 1½ inch stone and backed off with a heaping 4 yard payload *in only 7 seconds!*

Carries 5 ton load up 35° slope

High-speed loading like this has been *only one* of Michigan's important achievements. The 262 hp rig has taken over some tough stockpiling chores too. Like moving two-inch stone to the top of a 100 ft high stockpile. The last 60 feet of ramp to piletop here is pitched *at a 35-degree angle*—yet the Michigan regularly carries a heaping *5 ton load* up it. Back-dragging on the return trip accurately spreads and compacts a 4 to 5 inch layer of gravel to keep the ramp graded for continuous dumping.



"I particularly like Michigan's bucket action. Even in frozen stone, you can push in and get a full load without straining"—Operator Bob Faccin.



"This big Michigan effectively dresses stone stockpiles. Its 10'6" wide bucket makes it an excellent snow plow. It even does well on such tough dozer jobs as shovel cleanup and stripping quarry top prior to drilling"—Supt Theodore Tietz.

SPECIFICATIONS		
	Model 275A	Model 375A
Bucket capacity (standard SAE ratings)	4 yards	6 yards
Lifting capacity	22,000 lbs	30,000 lbs
Weight	45,000 lbs	61,000 lbs
Speeds (forward and reverse)	0-28 mph	0-25 mph

Seven other standard Michigan Tractor Shovel models, 16 cubic feet to 2¼ cubic yards (SAE bucket ratings), are available.

EACH 10 YARD TRUCK

Moves 11 ton boulders

Michigan handles "super-lifting" assignments too that smaller Tractor Shovels couldn't touch. Rip-rap, for example. Some of the traprock boulders uncovered in the Onegalia-Gervasini pit weigh 10 or 11 tons! The Michigan makes short work of stockpiling or loading them into trucks. "In fact," says Supt Tietz, "the Michigan frequently has moved rocks our quarry shovel couldn't handle!"

Model 275A easy to maintain

One reason O & G's Michigan performs so well on all these tough jobs is its all-Clark power train . . . Clark torque converter, power-shift transmission and planetary wheel drive axles . . . all matched to each other . . . all designed to the same general specifications as the Clark components which have proved so efficient in the 9,000 smaller Michigan Tractor Shovels sold since their introduction in 1954. Also, some credit for Michigan's good performance here should be given the simple, systematic maintenance procedure followed. About half an hour a day takes care of lubrication as well as oil, water and torque converter oil check. Once a week engine oil and air filters are changed. "It's an easy machine to service," says Operator Bob Faccin, "and we feel the time is well spent."

If you load trucks, we honestly believe *your* time will be well spent on a study of the big new Michigans. Both the big 4 yard Model 275A, described here, and the bigger 6 yard Model 375A are now proved by over a year in the field. Both are in regular production and readily available. See your local Michigan Distributor for details on performance . . . price . . . and delivery!

CLARK EQUIPMENT

Michigan is a registered trade-mark of
CLARK EQUIPMENT COMPANY
Construction Machinery Division
2481 Pipestone Road
Benton Harbor 18, Michigan
In Canada: Canadian Clark, Ltd.
St. Thomas, Ontario

INDUSTRY NEWS

(Continued from page 41)

Report deep drilling in Murphy marble bed

THE GEORGIA MARBLE CO. of Tate, Ga., in its explorational core-drilling program at the Willingham-Little Stone Co. Division, Whitestone, Ga., has drilled vertically to a depth of 700 ft. in the Murphy marble bed. This is believed to be the deepest penetration ever made in that formation.

Sand and gravel pumped from Arkansas river

SAND AND GRAVEL are being pumped out of the White River at Clarendon, Ark. About 1,000 cu. yd. of gravel are produced per day. A dredge pumps the sand and gravel into barges which are towed to the water's edge. A crane unloads the aggregates into a hopper, from which a conveyor belt carries it to a stockpile. Twelve persons are employed at the plant, which is operated by the Mobley Construction Co.

Pennsylvania Glass Sand to buy Industrial Silica

PENNSYLVANIA GLASS SAND CORP. of Lewistown, Pa., plans to acquire Industrial Silica Corp. through an exchange of stock. According to a proposal submitted to Industrial Silica shareholders by P. F. Forman, Industrial's chairman and president, one share of Pennsylvania Glass Sand would be exchanged for each 2¾ shares of Industrial Silica.

Industrial Silica has several silica properties and plants in Ohio and sells molding sands to steel and other metal industries in its area. Pennsylvania Glass Sand owns and controls silica properties in 10 states.

Pavement yardage

AWARDS OF CONCRETE PAVEMENT for the month of October and for the first 10 months of 1958 have been classified by the Portland Cement Association as follows:

	Sq. yd. awarded during	
	October	1st 10 mos.
Roads	5,189,345	56,578,573
Streets and alleys	2,571,930	27,827,347
Airports	143,425	18,084,787
Totals	7,904,700	102,490,707

U. S. Gypsum to expand its Canadian plant

A MULTIMILLION-DOLLAR plant expansion project for a Canadian subsidiary of United States Gypsum Co. and authorization for an addition to the parent company's fleet of ships have been announced by C. H. Shaver, company chairman.

The plant expansion announced is for an addition to the Hagersville, Ont., gypsum plant of Canadian Gypsum Co., Ltd. Cost of the addition will be in excess of $2 million. The construction will double the plant's capacity for making plaster base, gypsum wallboard, building plaster and gypsum sheathing.

Added to the company's fleet will be an 11,400-net ton, self-unloading ship. The new vessel would transport crude gypsum to the company's Eastern Seaboard and Gulf Coast plants from mines in Canada.

Cement makers switch to annual price plan

FACED WITH EXCESS CAPACITY and resulting keen competition, the cement industry has made a major change in its pricing policy: Producers are guaranteeing their customers in most parts of the country that prices will remain unchanged for a whole year. The quotations were previously set at three-month intervals.

Most of the prices set for 1959 are unchanged from 1958 levels. Chief exception is in the Northeast, where at least two major producers raised prices by 15 cents per barrel, effective January 1. Lehigh Portland Cement Co., Allentown, Pa., increased prices at mills at Alsen, N. Y., Union Bridge, Md., and Allentown, to $3.50 a barrel in bulk at the mill from $3.35, or about 4½ percent. Lehigh is guaranteeing the new prices will remain unchanged during 1959.

American Cement Corp. announced similar boosts and guarantees for its Hercules Division in Philadelphia. Price increases of 15 cents a barrel were also posted in northern California, Oregon, Washington and western Nevada. Cement prices at eastern mills had not been raised since April, 1957. Prices at midwestern mills rose 15 cents a barrel January 1, 1958.

The pattern of the year-long guaranteed price was probably set by Ideal Cement Co., which first offered the firm price in California in 1956. This year Ideal extended the policy to mills in Arkansas, Oklahoma and Louisiana.

By mid-November the annual pricing plan had been announced by mills of major producers in most of the U.S. Included were plants of Marquette Cement Mfg. Co., Chicago; General Portland Cement Co., Chicago; Universal Atlas Cement Co., New York; Medusa Portland Cement Co., Cleveland; Permanente Cement Co., Oakland, Calif.; Calaveras Cement Co., San Francisco; California Portland Cement Co., Los Angeles.

(News continued on page 46)

Calaveras Cement forms equipment-sales subsidiary



Barker **White**

FORMATION OF CALCO SUPPLY CO. as a wholly owned subsidiary of Calaveras Cement Co., has been announced. The new firm will function as sales representative for major manufacturers of machinery and equipment in the industrial field. It will concentrate primarily on northern and central California territories.

Calco officers are E. M. Barker, president; B. B. Woodward, Jr., vice president; Joseph Tedesco, treasurer; Emmett J. Norris, Jr., secretary. James White is manager of sales.

Minerals worth $822 million produced in Florida

FLORIDA'S RICH EARTH produced $821,770,000 worth of minerals during the past 10 years. Mining is a tremendously important Florida industry that employed 7,500 persons during 1956 and thousands more indirectly.

The principal mineral in the state, phosphate, with 1956 sales of $65,920,000, represented 75 percent of national production. Other Florida minerals and their amounts for 1956 include clays, including kaolin and fuller's earth, $5,235,000; sand and gravel, $4,155,000, and crushed limestone, $24,123,000.

these Quality Replacement Screens keep output high, costs low...



Be specific. Order wire screens by name. Durability, quality, accuracy vary widely! Ludlow-Saylor Screens insure precision and uniformity in meeting critical product specifications . . .

—won't bog down the plant with re-circulating loads that properly woven screens would have removed in the first pass . . .

—speed up the usual sluggish movement of feed across improperly woven screens . . .

—correct variations in crushing characteristics of raw material . . .

—cut frequent screen replacements, downtime and maintenance

Get better production from your investment in sizing equipment—*insist on Ludlow-Saylor Screens.*

Ludlow-Saylor Screens and Wire Cloth can be supplied in any steel including SUPERLOY high carbon, LUDLOY oil-tempered, stainless and other alloys; Monel, bronze, copper, brass or any metal that can be woven into wire.

Write for
Condensed Screen Reference Catalog

Immediate Shipment of most weaves and sizes

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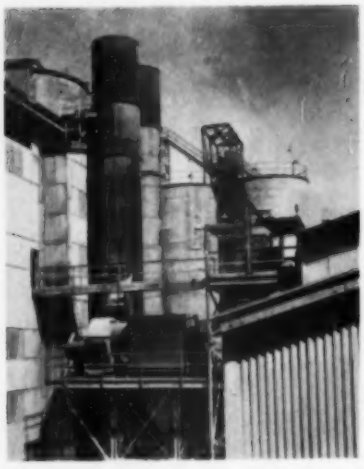
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DENVER, 1530 Carr St. • LOS ANGELES, Star Wire Screen & Iron Works, Inc. (Ludlow-Saylor Subsidiary), 2515 San Fernando Road.

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INDUSTRY NEWS

(Continued from page 44)



Dragon Cement plant installs dust collectors

THESE TWO STACKS, once a source of troublesome clinker dust at Dragon Cement Co.'s Northampton, Pa., plant, now emit a barely visible effluent. Nearly five tons of dust are trapped every 24 hr. by two 173-tube dust collectors installed on clinker coolers. The dust is being returned as a reusable product at an average rate of 9,500 lb. per day.

Producers, contractors form joint committee

THE NATIONAL SAND AND GRAVEL ASSOCIATION, the National Ready Mixed Concrete Association and the Associated General Contractors of America have formed the Concrete and Aggregates Producers-Associated General Contractors Joint Cooperative committee.

The broad purpose of the CAP-AGC Joint Cooperative Committee is to provide a medium for the discussion of problems affecting members of the three associations and for the formulation of recommendations concerning them for the consideration of the parent organizations. The committee, it was explained, will not interfere with the objectives and activities of any of the associations, and its recommendations must be adopted by the parent organizations before they can become effective.

Eight members of the committee were appointed to represent the concrete and aggregates producers, and eight as representatives of the AGC. One member of each group of eight was designated co-chairman of the committee. Co-secretaries were also named.

E. Phil Gemmer, president of NSGA, and M. Eugene Sundt, NRMCA president, announced the following appointments: Robert Mitchell, Consolidated Rock Products Co., Los Angeles, co-chairman; Ralph H. Anderson, Anderson Concrete Corp., Columbus, Ohio; Fred P. Curtis, Lyman-Richey Sand & Gravel Corp., Omaha; E. K. Davison, J. K. Davison & Brother, Pittsburgh; Herbert G. Jahncke, Jahncke Service, Inc., New Orleans; John W. Murphy, Union Sand and Gravel Co., Spokane; John W. Roberts, Southern Materials, Inc., Richmond, Va., and F. E. Schouweiler, Old Fort Supply Co., Fort Wayne, Indiana.

Vincent P. Ahearn, executive secretary of NSGA and NRMCA, is co-secretary of the committee.

Hawaiian volcano supplies new lightweight aggregate

A VOLCANIC LIGHTWEIGHT aggregate is being produced in Kona, T.H., by Volcanite, Ltd. The firm has leased Puuwaawaa, a volcanic hill with enough aggregate material to supply the Hawaiian Islands for generations.

Volcanite is a volcanic product, but it is not a cinder. It is a pumice formed by heat and pressure. Kona Tile, an affiliate of Volcanite, Ltd., is producing lightweight block using the volcanic aggregate.

Canadian quarry undergoes expansion

NEW EQUIPMENT costing $850,000 was purchased by the Alvin Naiman Corp. as part of a big expansion of its quarry operations at Port Colborne, Ont. Naiman, which purchased the Niagara Crushed Stone Ltd. facilities at Port Colborne last year, announced that it has increased its production of crushed stone from 1,200 to about 7,000 tons per day. President Alvin Naiman said that the company hopes to enter the Buffalo market.

New equipment includes three crushers, five dump trucks, a power shovel and several large automatic drills. About 30 acres of the company's 150-acre property are now being quarried, about double the amount being worked at the time Mr. Naiman purchased the property.

Vulcan Materials Co. expects 1959 sales gain

SALES OF VULCAN MATERIALS CO. in 1959 should reach about $110 million, according to Charles W. Ireland, president. In *The Wall Street Journal* Mr. Ireland predicted that 1958 volume would total about $100 million, up from $90.6 million in 1957. Profits in 1958 were expected to be about $7 million, up from $5,778,000 the year before.

Mr. Ireland said that the company expects a proportional increase in profits for 1959, but that the actual outcome will depend upon the competitive situation during the year. "The company hopes to be able to continue reducing costs through reorganization of its divisions and the installation of new equipment," he said.

In 1957, aggregates accounted for more than 30 percent of Vulcan's total sales; concrete products contributed more than 20 percent of sales.

Vulcan expected to complete the first phase of a $4,000,000 modernization of its stone crushing plant in Chicago during November and plans to complete the second phase of the remodeling by April, Mr. Ireland said. Expenditures for new plant and equipment should amount to about $10 million.

The company completed several mergers in the last two years and is not ruling out further expansion by merger or acquisition. Mr. Ireland said that the company spent 1958 "digesting our earlier acquisitions."

(News continued on page 50)

Emergency road construction zooms

THE EMERGENCY ABC road-building program authorized under the 1958 Highway Act gathered momentum swiftly as the deadline for placing work under contract approached, the American Road Builders Association reported. The act authorized $400 million in federal funds to be made available on a 66⅔ federal to 33⅓ state matching basis, but the funds are available only for work placed under contract prior to December, 1958. Reports from the Bureau of Public Roads on the status of this "D funds" construction show how activity spurted during September:

	As of 8/31/58	As of 9/30/58
Construction under way:		
Total cost	$195,141,458	$290,762,071
D funds	$129,416,493	$191,249,731
Matching state funds	$ 75,724,965	$ 99,512,340
Project miles	3,972.7	5,819.0
Construction completed:		
Total cost	$ 1,288,606	$ 7,264,159
D funds	$ 837,680	$ 4,852,208
Matching state funds	$ 450,926	$ 2,411,951
Project miles	157.8	502.5

Which is the Best Screen for your job?

The vibrating screens you select to meet today's extremely competitive conditions must be highly specialized machines . . . designed especially to handle each of *your particular jobs.* And that's why Deister builds screens in four distinct *types* and in a complete range of *sizes.* For example:

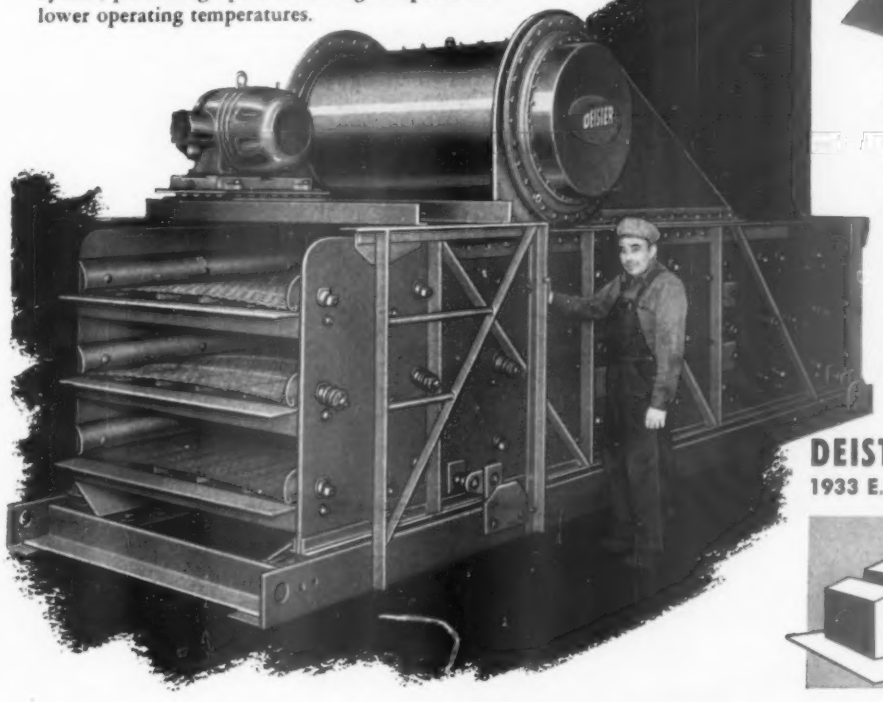
Type UHS. Deister Type UHS Screens are built in a full range of sizes to meet any heavy-duty screening job. Extra heavy-duty types are available for scalping and coarse sizing. The Deister principle of opposed elliptical throw provides maximum capacity and efficiency in sizing. With Deister's exclusive Adjustable Slope Screen Panels, the screening angle of every Type UHS may be adjusted exactly at both feed and discharge ends to meet the specific requirements of your job.

Ag-Lime. Deister Ag-Lime Screens (Type USL) are designed to screen damp, sticky material through medium and medium fine screen cloth openings. They apply intense vibration at a relatively high frequency. For unusual conditions they are available with an Electric Screen Heater and a Ball Tray Deck.

Flat Screens (Type UF). If your plant design requires flat or horizontal screens, or if you need increased tonnage but lack the head room necessary to install larger inclined screens, investigate Deister Type UF Screens. They are also unusually effective for dewatering sand, gravel and stone.

An outstanding feature of *all* Deister Vibrating Screens is Deister's Exclusive Oil Mist Lubricating System, permitting operation at higher speeds and lower operating temperatures.





Top: Type UHS Screens are available in 3', 4' and 5' widths; in 10', 12', 14' and 16' lengths; and with single, double or triple decks.

Above: Type USL Ag-Lime Screens are built in 4' x 8' and 4' x 10' single-deck models.

Left: Type UF is built in 3', 4' and 5' widths; in 8', 10', 12', 14', 16' and 18' lengths; in single, double, triple and four-deck models.

DEISTER MACHINE CO.
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DEISTER

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NEW DW20
Series G

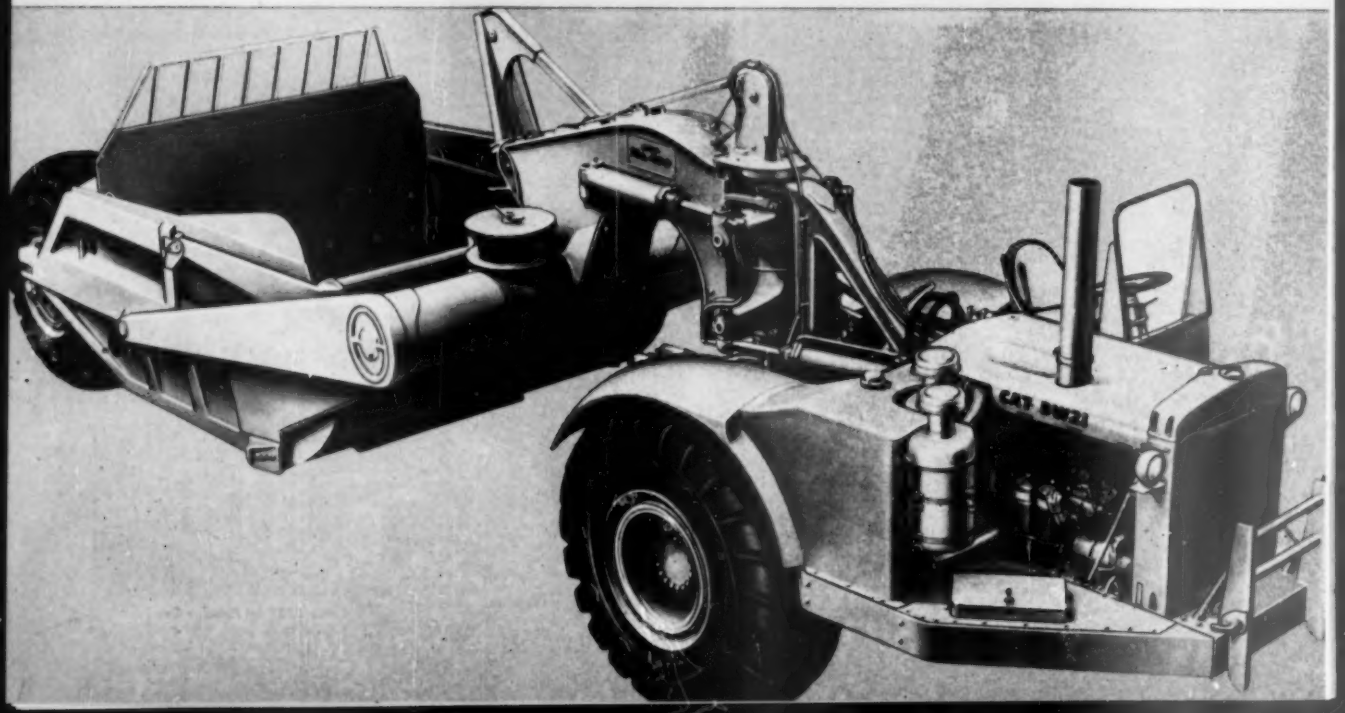
NEW No. 456
Series B

NEW HP —345 (maximum output)—increased 8%
NEW RIMPULL —39,565 lb. (maximum)—increased 12%
NEW SPEEDS —increased rimpull—provides up to 20% faster travel speeds under normal haul road conditions
NEW CAPACITY—19.5 cu. yd. (struck)—increased 8%
27 cu. yd. (heaped)—increased 8%

NEW DW21
Series G

NEW No. 470
Series B

NEW HP —345 (maximum output)—increased 8%
NEW RIMPULL —49,100 lb. (maximum)—increased 12%
NEW SPEEDS —increased rimpull—provides up to 20% faster travel speeds under normal haul road conditions
NEW CAPACITY—19.5 cu. yd. (struck)—increased 8%
27 cu. yd. (heaped)—increased 8%



CATERPILLAR'S PROJECT PAYDIRT

PROJECT PAYDIRT* *pays off for you*

NEW CAT DW20 and DW21 SERIES G TRACTORS NOW 345 HP

—plus new high-capacity LOWBOWL Scrapers for faster cycles and higher production!

For down-to-earth facts about these big new Caterpillar rigs, take a look at the box scores shown here. They summarize important increases in horsepower, rimpull, speeds, scraper ratings and tire capacities that pay off for you *on the job* with faster cycles, greater production and more profit!

Note that the increased HP of the DW20 and DW21 Series G, compared with the models they're replacing, gives 12% higher rimpull. This increased rimpull provides up to 20% faster travel speeds under similar haul road conditions. Equally important, this horsepower increase was achieved without any sacrifice whatsoever in the excellent torque characteristics inherent in the Cat Super-Turbo Engine. Torque rise of the engine in the Series G models is unequaled in the earthmoving industry.

In addition to the advantages featured in the box scores, the new Series G Tractors and their matching LOWBOWL Scrapers deliver the *proved* reliability of Caterpillar-built machines. To handle increased horsepower and increased capacity, both have been improved in design and structure. The tractors, for example, have stronger final drive gears and improved transmission shifter forks. The scrapers have stronger bowls, push frames, draft frames and aprons. All these and other improvements result in better service life, less maintenance and lower cost dirt.

Here are modern, heavy-duty wheel rigs geared to the needs of today's highly competitive market—rigs that meet your requirements for moving more dirt at lower cost than ever. Get the complete facts about them from your Caterpillar Dealer. Call him today and set a date for a demonstration!

Caterpillar Tractor Co., Peoria, Illinois, U. S. A.

CATERPILLAR

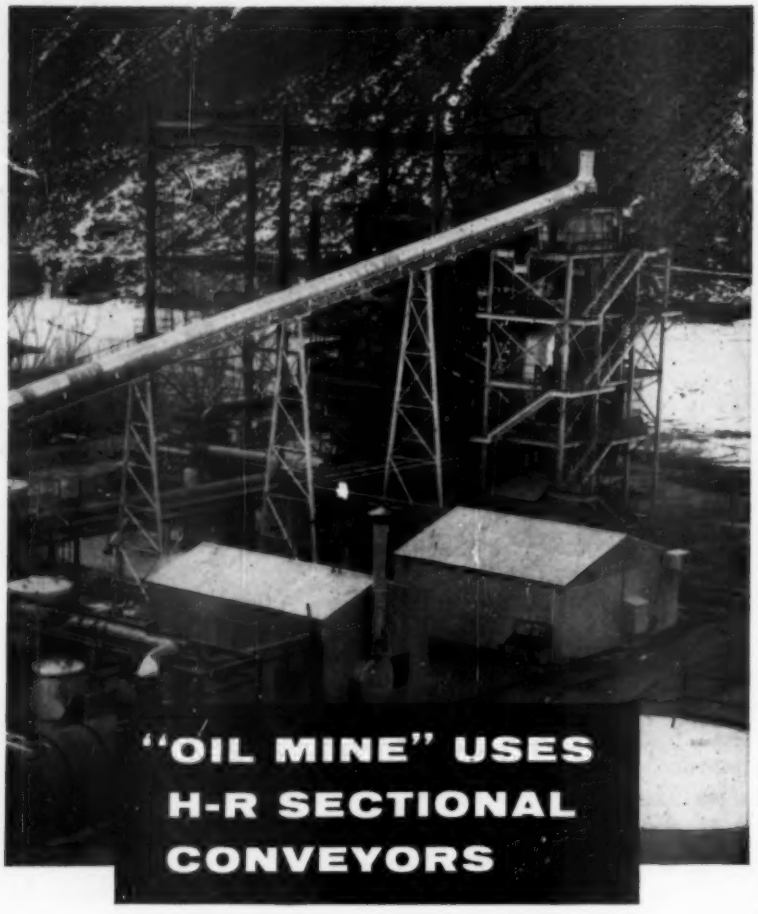
Caterpillar and Cat are Registered Trademarks of Caterpillar Tractor Co.

BORN OF RESEARCH
PROVED IN THE FIELD

TIRES: 29.5-29 (28-ply rating) are now standard in place of the former 29.5-29 (22-ply rating)—a tire capacity increase of 16% to match the increased scraper capacity, heavier machine weight and higher speeds made possible by more HP. Note: On the DW20 Series G, the front tires remain the same—14.00-24 (16-ply rating).

CATERPILLAR'S PROJECT PAYDIRT

***PROJECT PAYDIRT:** Caterpillar's multi-million-dollar research and development program—to meet the challenge of the greatest construction era in history with the highest production earth-moving machines ever developed.



Oil carried by belt conveyors is one unique aspect of this experimental oil processing plant built in Colorado for the Union Oil Company of California by Stearns-Roger Manufacturing Company of Denver. Hewitt-Robins sectional belt conveyors are used to carry oil-bearing shale through crushing, screening, storage, and final extraction in an operation which may unlock reserves of a trillion barrels of oil. Because of standard design and interchangeable components, these H-R factory-built sectional conveyors are easily lengthened or relocated to give flexibility to the system.

These pre-engineered conveyors are designed to handle bulk materials from wood chips to lead ore at capacities up to 1000 TPH and speeds as high as 650 FPM. They are easily assembled in the field by your own men.

For information or service, contact your local H-R representative or Hewitt-Robins, Stamford, Conn.

HR HEWITT-ROBINS

CONVEYOR BELTING AND IDLERS . . . POWER TRANSMISSION DRIVES
INDUSTRIAL HOSE . . . VIBRATING CONVEYORS, SCREENS & SHAKEOUTS

H-R Product Manufacturing Plants in Buffalo, N. Y. • Chicago, Ill. • King of Prussia, Pa. • Passaic, N. J. Amsterdam, Holland • Johannesburg, South Africa • London, England • Montreal, Canada • Paris, France

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INDUSTRY NEWS

(Continued from page 46)

Here's the agenda for NSGA convention

A SEARCHING STUDY of public relations problems will feature the 43rd annual convention of the National Sand and Gravel Association, which will take place February 16-19 at the Hotel Roosevelt, New Orleans, La.

First day of the convention will be devoted to a conference on the operation of state and area associations. The subject of public relations comes to the fore in the NSGA's morning session February 17. Following an address by E. Phil Gemmer, association president, public relations committee chairman E. K. Davison will speak on the public relations program of the sand and gravel industry. Dr. H. H. Schrenk, managing director of the Industrial Hygiene Foundation, will evaluate dust and noise conditions at typical sand and gravel plants. "Public Relations and the Zoning Process" will be the topic of W. I. Thieme, vice president of Indiana operations, American Aggregates Corp. William E. Clark, executive vice president of the Dravo Corp., is to speak on the public relations value of annual reports. At the close of the session, officers will be elected and proposed constitutional amendments will be considered.

At the joint afternoon session of NSGA and NRMCA February 17, William Moore will discuss 1959 market prospects for the sand, gravel and ready-mix industries. Federal tax developments in 1958 will be outlined by John T. Sapienza, counsel for the associations, and Executive Secretary Vincent P. Ahearn is scheduled to speak on problems faced by the Democratic Congress and the Republican administration. NSGA and NRMCA safety trophies are to be awarded at the end of this session.

Wednesday morning, February 18, will lead off with a review of operating problems in the sand and gravel industry by Irving Warner, Jr., vice president of Warner Co. E. Norman Bernhardt, Jr., also of Warner Co., will summarize the firm's studies of excavation and plant transportation. A. H. Baxter, general superintendent of Consolidated Sand & Gravel Ltd., Toronto, Canada, is scheduled to discuss belt transportation. Use of wire cloth for screening gravel is to be the topic of W. L. Price, of Dravo, while William E. Hole, Jr., vice president of American Aggregates Corp., will speak on removal of deleterious materials from gravel by means of jigs.

(News continued on page 52)

New JOY TDL Trac-Drill cuts drilling costs from Every Angle



. . . more versatility, more economy, more dependability

The TDL is a new lightweight, self-propelled drill chassis accommodating a wide range of Joy drifter drills. You can choose the best combination for your production needs, available air supply and budget requirements.

The TDL chassis mounts any one of 5 famous Joy Silver Streak Drifter Drills—making it possible to drill blast holes 1¾" to 4" in diameter, 18' to 40' in depth. You select a unit that matches your compressor—for TDL drill combinations give you a range from 250 to 600 c.f.m. THAT'S VERSATILITY.

The TDL has built-in strength that gives excellent drill stability for quick hole spotting even in rough terrain. Practical, simple design permits fast, easy maintenance and keeps downtime to a minimum. THAT'S ECONOMY.

The Joy TDL is made right, built rugged and has powerful Joy Pistonair motors for ample tramming speed and power for any job. It has been proven on rough jobs. THAT'S DEPENDABILITY.

There's more to the story . . . write for the name of your nearest Joy Distributor. He'll show you why the Joy TDL Trac-Drill is your best buy—and how you'll get *your* share of the CONSTRUCTION AHEAD . . . with Joy Construction Equipment. Write ***Joy Manufacturing Company, Oliver Building, Pittsburgh 22, Pa.*** In Canada: *Joy Manufacturing Company (Canada) Limited, Galt, Ontario.*



The teamwork of the new Joy Trac-Drill and the reliable Joy Airvane Rotary Compressor cuts blasthole costs to minimum. Joy Rotary Portable from 125 cfm through 900 cfm.

Write for Free Bulletin, 238-27

JOY Manufacturing Company, Oliver Building, Pittsburgh 22, Pa.

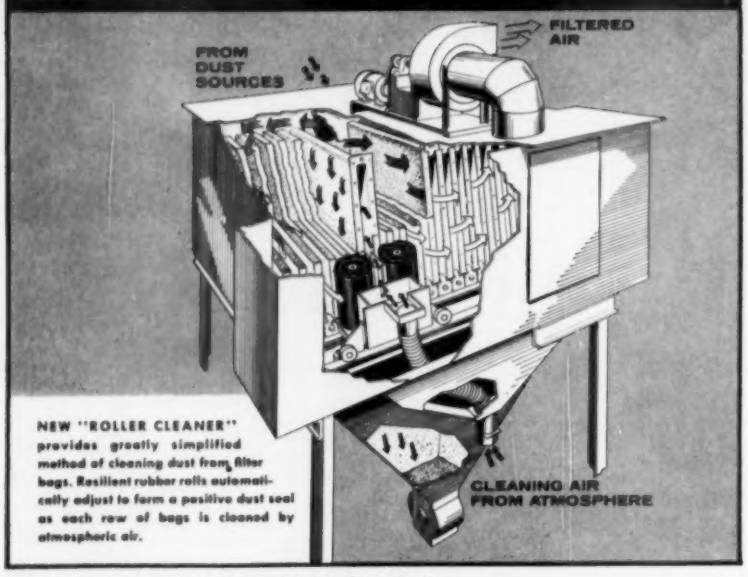
EQUIPMENT FOR CONSTRUCTION

PORTABLE AND SEMI-PORTABLE AIR COMPRESSORS • ROCK DRILLS • TRAC-DRILLS • DRILL BITS • BACKFILL TAMPERS • SPADERS
PAVING BREAKERS • SHEETING DRIVERS • DRIFTERS • PORTABLE HOISTS • FANS AND BLOWERS • PORTABLE SAFETY LIGHTING

W&W C7092-236

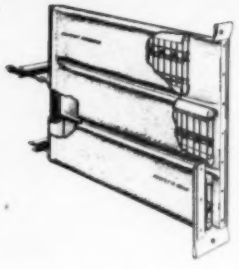
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NEW SLY DYNACLONE® DUST FILTER



Patent Nos. 2583039, 2695681, 2867289. Other Patents Pending.

NOW! As Much As 3 TIMES LONGER FILTER BAG LIFE



NEW SLY "RESIST-O-WEAR" FILTER BAGS (patent pending) provide complete dust filtration with as much as three times longer life than conventional bags. This has been proved on the toughest field installations.

The new bag has three equal-size sections. Each pocket has two spacers, making a total of six per bag. Weight is distributed on three seams rather than one, minimizing strain. A special protective flap on the back end prevents abrasion from incoming dust.

Now standard in the new "Roll-Clean" Dynaclone, Sly "Resist-O-Wear" bags combine with all the other superior Dynaclone features to assure greatest dust collecting efficiency with unequalled maintenance-free service.

ALL THESE FEATURES IN ONE DUST FILTER

- New "Resist-O-Wear" bags last as much as three times longer.
- Constant suction at dust sources—complete dust collection.
- Automatically self-cleaning for continuous operation.
- Free-rolling cleaner. Complete dust seal—automatic seal adjustment.
- Greater filtering capacity; smaller space requirements.
- Simplified construction for ease of inspection and servicing.

SEND FOR New Bulletin 105 and New 36-page Dust Control Catalog 104.

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THE W. W. SLY MANUFACTURING CO.

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INDUSTRY NEWS

(Continued from page 50)

List cement equipment to be shipped in 1959

THE FOLLOWING cement-plant equipment manufactured by F. L. Smidth & Co. is scheduled to be placed in production in 1959:

American Cement Corp., Clarkdale, Ariz.—two 10 x 12 x 350-ft. rotary kilns; three 1,250-hp. ball mills equipped with Symetro drives for grinding of raw materials and cement. This plant is under construction, and the equipment will be shipped during the fourth quarter of 1959.

Canada Cement Co., Ltd., Montreal East, Que.—one 2,000-hp. Unidan mill, including Symetro drive, for clinker grinding. This unit will be shipped this month.

Cementos Hidalgo, Monterrey, Mexica—a 1,000-hp. ball mill for raw materials will be shipped during the first quarter of 1959.

Columbia-Southern Chemical Corp., Pittlime, Ohio—13 x 14½ x 460-ft. kiln with slurry preheater; 1,500-hp. Unidan mill with Symetro drive for raw grinding; 2,000-hp. Unidan mill with Symetro drive for cement grinding. The equipment for this new cement plant will be shipped during the first quarter of 1959.

Dundee Cement Co., Dundee, Mich.—two 16½ x 15 x 460-ft. kilns. The equipment for this new plant will be shipped this summer. The kilns reportedly will be the largest installed in any cement plant in the U. S.

Giant Portland Cement Co., Egypt, Pa.—two 1,000-hp. ball mills for raw materials. These mills were scheduled to be shipped during the fourth quarter of 1958.

Lehigh Portland Cement Co., Mitchell, Ind.—two 11½ x 400-ft. kilns. These kilns are for an existing plant and are scheduled for shipment this spring.

Southwestern Portland Cement Co., Odessa, Texas—the 11½ x 400-ft. rotary kiln for this new plant was due to be shipped in December, 1958.

Page the author

"A NEW WRINKLE in cement loading stations," on page 125 of the November issue, was written by Robert J. Wright, staff engineer for American Air Filter Co., Inc. The dust arresters and exhausters he mentions were made by his company, while the pneumatic conveyors were made by Fuller Co. We regret that this information was not included in the published story.

(News continued on page 54)

NEW TESTING TECHNIQUES PROVE CARBEX BALLS YOUR BEST BUY



Coates Carbex Triple-Forged Grinding Balls proved their durability and performance in a recent production run test. Using a newly developed scientific method of invisibly marking balls for positive identification, technicians charged a finish grinding cement mill with Coates Carbex Balls as well as other types. Ninety-eight per cent of the test balls were recovered after thousands of hours . . . laboratory inspection demonstrated conclusively that Carbex Balls, costing only a few cents per pound, performed excellently, showed little wear, gave more service per cost dollar.

Coates has continuously sponsored research to develop better grinding balls. The low cost, high-performance Carbex Triple-Forged Grinding Ball made of fine-grained, high carbon steel is specially forged to attain more perfect sphericity . . . heat treated to extreme hardness . . . toughened to stand stresses. Dollar for dollar, on a true cost basis, Coates proved better than the best.

case 2



COATES INVITES COMPARISON

Write for prices . . . All sizes ½" to 5" carried in stock for immediate shipment.

COATES STEEL PRODUCTS CO. CARBEX TRIPLE-FORGED BALLS

COATES STEEL PRODUCTS CO.

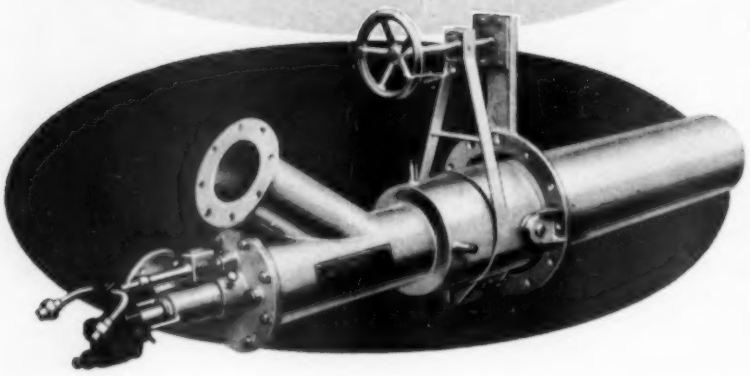
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F-L-E-X-I-B-I-L-I-T-Y
INTO YOUR OPERATION

with the versatile
PEABODY KILN BURNER!



features...

DUAL FUELS • WATER-COOLED AIR TUBE
ADJUSTABLE FLAME LENGTH • TILTING MOUNT

Leading chemical, rock product and paper and pulp manufacturers prefer the Peabody kiln burner for firing cement, lime or other types of calciners. This rugged, economical water-cooled unit fires gas or oil. In a matter of seconds it can be switched from one fuel to the other without loss of capacity.

Regulation of low pressure primary air changes the flame length to suit operating requirements — axial adjustment of the fuel gun in relation to the water-cooled air tube provides further flame shaping.

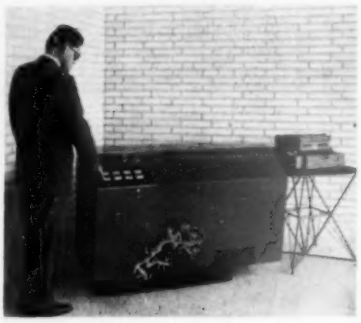
Available in nine standard sizes ranging in capacity from 2 million to 250 million BTU/hr. with flexible mounts for tilting the burner. Special units permit all of the combustion air to pass through the air tube. For detailed information write direct or call your nearest Peabody representative.

PEABODY ENGINEERING CORPORATION
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INDUSTRY NEWS

(Continued from page 52)



Riverside moves toward automatic plant control

RIVERSIDE CEMENT CO., a division of American Cement Corp., has purchased an RW-300 digital-control computer system as the first step toward fully automatic control of its Oro Grande, Calif., plant. The electronic computer, manufactured by Thompson-Ramo-Wooldridge, Inc., will guide the operation of a completely mechanized rock-blending system now being installed at the plant, Riverside president J. M. Kinard announced. The computer will also provide information to guide quarrying operations.

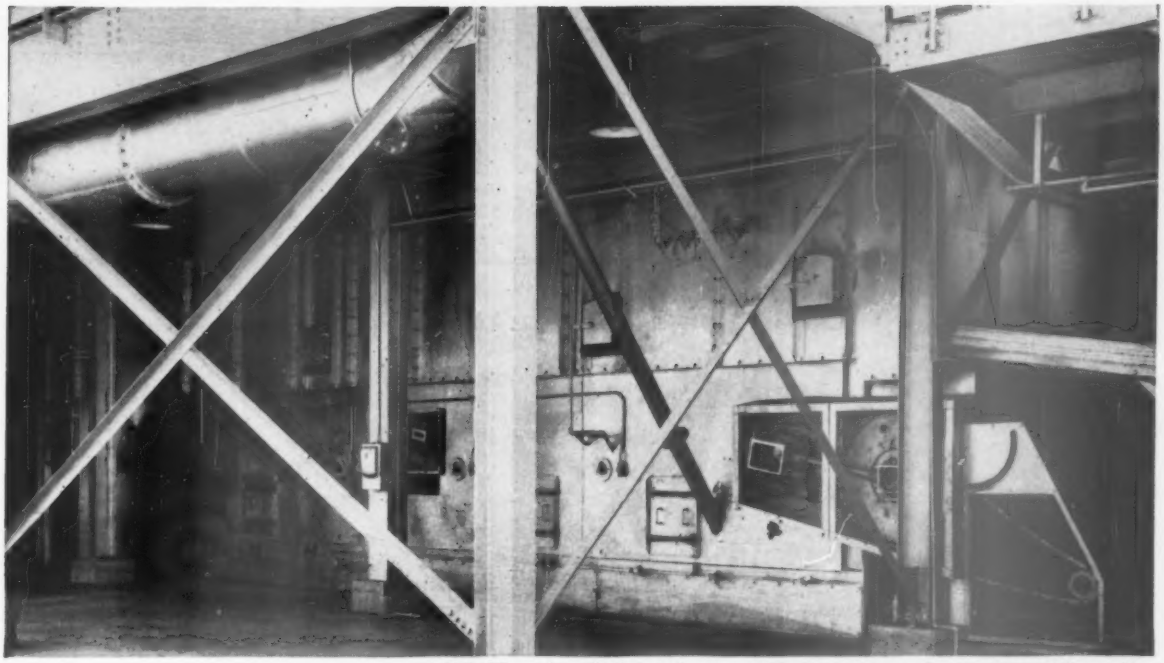
Along with the new crushing and blending facility, which is scheduled for completion this month, plans are under way to increase the plant's kiln capacity. The first segment of this increase is scheduled to be in operation by April 1, 1959. The Oro Grande plant now has a rated capacity of more than 5 million bbl. annually.

"Use of the RW-300 computer to solve complex control problems rapidly and autotmatically will permit us to operate the plant more efficiently," Mr. Kinard explained.

Portland cement production

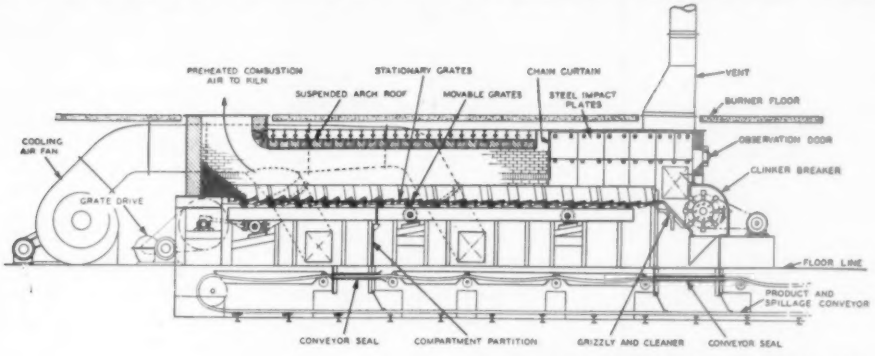
PRODUCTION of finished portland cement in September, 1958, as reported to the Bureau of Mines, totaled 31,597,000 bbl., an increase of 2 percent over September, 1957. Mill shipments in September, 1958, totaled 34,767,000 bbl., an increase of 14 percent compared wtih September, 1957. Stocks of 24,449,000 bbl. of finished portland cement on hand September 30, 1958, were 21 percent more than those on hand a year before. Clinker production during September, 1958, totaled 28,124,000 bbl., a slight increase of .04 percent over the year-earlier figure. These figures were provided by 163 plants in 37 states and Puerto Rico.

(News continued on page 56)



Side View from feed end of a 7' x 44' Horizontal-Grate Cooler, designed for cooling 4,000 barrels of Portland cement clinker per day, showing crank type grate drive

New Fuller HORIZONTAL-Grate Cooler



Cross-section drawing showing construction and arrangement of a typical Horizontal-Grate Cooler with clinker breaker.

Compact . . . Economical . . . Fast-cooling. Already proven in use, the compact, efficient design of Fuller's new Horizontal-Grate Cooler promises savings for many plants. It's an ideal choice where headroom is at a minimum . . . where a short, compact unit is desired.

Like the famous Fuller Inclined-Grate Cooler, the new Horizontal-Grate type is meeting with wide acceptance. One of the new units, already in operation, is shown above.

A Fuller Horizontal-Grate Cooler or an Inclined-Grate unit is the right answer to your cooling needs. Fuller coolers are used for a wide range of materials including lime, dolomite, cement clinker, iron nodules, phosphate nodules, sinter, ores, and others. Fuller sales engineers will be glad to discuss your cooling problems and make recommendations for your plant—without obligation, of course.

Features of the Fuller HORIZONTAL-Grate Cooler

- Requires a minimum of headroom
- Short length if necessary
- Better secondary air temperature control
- Less refractories
- Less installation time
- More rapid clinker distribution
- More uniform bed thickness

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"See Chemical Engineering Catalog for details and specifications".

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RECOGNIZE THIS LOT?



It's the lot of a Caterpillar Dealer, one of over 300 in the U. S., offering you the best buys in used equipment!

No matter what you want in used equipment, no matter what the price range, your Caterpillar Dealer is headquarters for your best buy. No other dealer offers you "buys" with this protection:

BONDED BUY

1 **A "BONDED BUY"** up to $10,000 on used Cat-built equipment—your guaranteed assurance of satisfactory performance on *all* parts of the machine during the guarantee period.

2 **A "CERTIFIED BUY"**—his written guarantee covering units of any make.

3 **A "BUY AND TRY"** deal—his written money-back agreement on units of any make.

For the best buys in your area, to be *sure* of what you're buying, see your Caterpillar Dealer. You'll find him listed in the Yellow Pages!

Caterpillar Tractor Co., Peoria, Illinois, U.S.A.

CATERPILLAR

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BEST BUYS IN NEW AND USED EQUIPMENT

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INDUSTRY NEWS

(Continued from page 54)

Correction

IT'S IMPOSSIBLE TO IMPROVE on the author's version, as we discovered after type had been set on W. A. Rundquist's article on sand washing in the November issue. The top paragraph of the right hand column on page 83 should have read:

"Where water is used, the heaviest and largest particles in the flow of fines entering the separator will settle first, because they have less relative buoyancy."

(News continued on page 61)

Calendar of Coming Conventions

1959

January 8-11, 1959—
Expanded Clay & Shale Association, Annual Meeting, The Hotel Cleveland, Cleveland, Ohio

January 19-21, 1959—
National Agricultural Limestone Institute, 14th Annual Convention, Hotel Statler, Washington, D.C.

January 21-22, 1959—
National Crushed Limestone Institute, 4th Annual Convention, Hotel Statler, Washington, D.C.

January 27-30, 1959—
National Crushed Stone Association, 42nd Annual Convention, Bal Harbour Area Hotel Group, Miami Beach, Fla.

February 2-6, 1959—
American Society for Testing Materials, Committee Week, Penn-Sheraton Hotel, Pittsburgh, Pa.

February 15-19, 1959—
American Institute of Mining, Metallurgical and Petroleum Engineers, Annual Meeting, St. Francis, Sheraton Palace and Sir Francis Drake Hotels, San Francisco, Calif.

February 15-19, 1959—
National Sand and Gravel Association, 43rd Annual Convention, Hotel Roosevelt, New Orleans, La.

April 6-8, 1959—
National Lime Association, Annual Convention, Homestead, Hot Springs, Va.

April 23-25, 1959—
Texas Aggregates Association, 5th Joint Annual Convention With TRMCA, Shamrock Hilton Hotel, Houston

June 21-26, 1959—
American Society for Testing Materials, Annual Meeting, Chalfonte-Haddon Hall, Atlantic City, N.J.

September 13-18, 1959—
American Society for Testing Materials, Third Pacific Area National Meeting, Sheraton Palace Hotel, San Francisco, Calif.

September 27-30, 1959—
National Sand and Gravel Association, Semi-Annual Meeting, Board of Directors, Lake Placid Club, Lake Placid, N.Y.



A section of Hudson's Multiwall design facilities, the largest and most experienced in this country.

THE ODDS are 9 to 1

you can increase your sales through a Design Improvement

FIELD REPORT

TO: B.D.

RE: New Bag Design for [redacted]

Brought the new multiwall design to their PA, Mr. [redacted] today. He was so pleased with it that he took it right up to Mr. [redacted], their president, who was tickled with it. He especially liked the idea of simplifying the design, thus reducing his costs. At the same time, he agreed that we had greatly improved appearance, strengthened identification, and brought out his true selling points in much better way. He now considers the bag an "ace salesman", and praised the PA for getting such a fine design at no cost to his company.

Hudson Bags increase your sales — cut your costs!

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Program Preview

FOUR DAYS FILLED WITH DISCUSSIONS OF INDUSTRY-WIDE PROBLEMS AND SOLUTIONS

42nd ANNUAL CONVENTION NATIONAL CRUSHED STONE ASSOCIATION

TUESDAY

"Safety Progress in the Crushed Stone Industry"
"First International Skid Prevention Conference"
"New NCSA Accounting Manual for the Crushed Stone Industry"
"Startling Implications of Union Political Power"
Greeting Luncheon—Presentation NCSA Safety Contest Awards
Afternoon—"Round Table on the Application of the New NCSA Accounting Manual"
Evening—Open for Individual Plans

WEDNESDAY

Operating session—informative talks on operating problems concurrently with . . .
Session for Salesmen
General Luncheon—"Humor in Your Business"
Afternoon and Evening—Open for Individual Plans

THURSDAY

Simultaneous Informal Group Discussions on Operating Problems concurrently with . . .
Session for Executives—"Federal Regulations, Percentage Depletion, Depreciation, Taxes and Labor Relations"
Luncheon—Manufacturers Division
Afternoon—Open for Individual Plans
Evening—Patio Party—dining, dancing, entertainment

FRIDAY

"Large Size Aggregate Bituminous Concrete Base Construction"
"Bituminous Concrete Placing—Operation and Control"
"The Global Picture—Uncensored"
"Getting the Job Done Through Others"

FOR THE LADIES

Entertainment and special functions for the ever increasing number of ladies attending the convention.

AMERICANA HOTEL, MIAMI BEACH, FLORIDA

January 27, 28, 29, 30, 1959

You get extra production, extra value with BUCYRUS-ERIES



POWER flows smoothly from engine to front end, giving you extra muscle where it counts! Clutches and brakes stay even and true because they're self-adjusting for temperature changes during operation.

Weight of all machinery is distributed to give you coordinated dig-swing-dump stability that means fast cycles. Service is easy because every major assembly is readily accessible. Power is transmitted from engine to transmission shaft by a multiple-strand roller chain fully enclosed and running in oil. Routine lubrication is fast because most fittings are centrally located, easy to reach.

Bucyrus-Eries last longer as proved on thousands of jobs all over the country! They're worth more when you trade, too. Call your nearby distributor today and get details on the size you need to increase pit output . . . make more profit!

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RAYMOND
HIGH SIDE ROLLER MILLS



TODAY'S ECONOMY UNITS FOR FINE GRINDING OPERATIONS

ROLLER MILL ECONOMY is an accepted term long associated with the Raymond line of finely engineered roller mill equipment, developed over seventy years ago, and known throughout the industry for its traditional record of service.

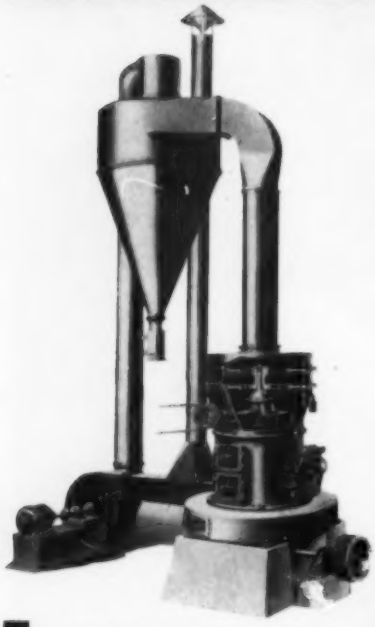
Raymond present-day designs incorporate many cost-saving features that culminate in time-proven efficiency for the production of uniform quality powdered materials.

(1) Pneumatic feed control maintains a maximum "load" on the mill and keeps it at full capacity during the entire run.

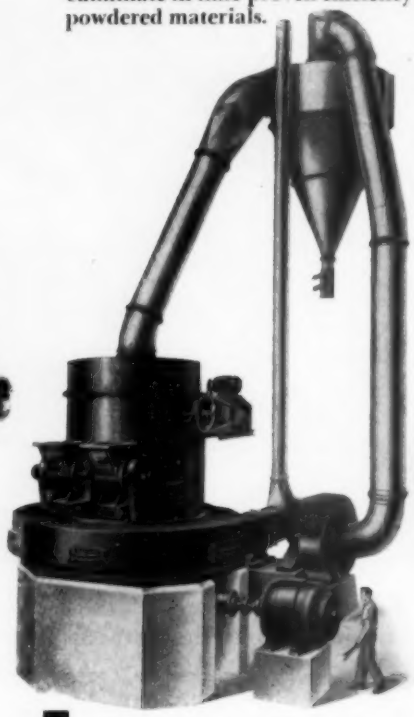
(2) Self-lubricating oil journals on the roll assemblies insure constant, automatic circulation of the oil, resulting in important economies in lubrication and maintenance.

(3) Large rugged bearings, heavy over-size shafts, finely balanced construction and grinding elements made with specially hardened wearing surfaces, all contribute to long service-life and low-cost performance.

Protect your profits with dependable equipment.



STANDARD ROLLER MILL with Whizzer Air Separation. Provides instant fineness control over a wide range by one simple adjustment, and maintains consistent uniformity of product.



SUPER ROLLER MILL for maximum economy in handling extra large capacities. Built in several sizes of five-roller and six-roller mills, capable of delivering from 15, 20 to 30 tons or more per hour.



ROLLER MILL equipped with Raymond Flash Drying System for simultaneously drying and grinding material containing small percentages of surface moisture. Important savings result through elimination of separate dryers and conveyors.



For general information of Raymond Roller Mills, see Catalog No. 79. For specific details of Super Roller Mills, write for Bulletin No. 72.

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Raymond Division

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CHICAGO 22, ILLINOIS

Combustion Engineering-Superheater Ltd., Montreal, Canada

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INDUSTRY NEWS

(Continued from page 56)

Slag prospects good, says E. W. Bauman

NATIONAL SLAG ASSOCIATION'S Managing Director, E. W. Bauman, takes an optimistic view regarding 1959 slag production. In answer to a request for a forecast by ROCK PRODUCTS, Mr. Bauman wrote:

"Notwithstanding the relatively low rate of blast furnace operation in the production of pig iron and its co-product, slag, during 1958, slag processors were able to take care of most order commitments by reworking older banks where such were in existence, and by adjustment of shipments according to job priority, etc. Due to this curtailed furnace operation, total slag output for 1958 will probably be down as much as 15 percent from each of the two previous years record production of 35 million tons. However, prospects for 1959 are good since demand for slag remains at a high level and indications for a high rate of operations within the steel industry are most promising. It is reasonable to expect that a supply in the neighborhood of 35 to 40 million tons will be made available."

186 miles of roads completed in September

PROJECTS TOTALING 186 MILES were completed on the Interstate System during September, at a cost of $59 million, the Bureau of Public Roads announced. This brought the total completed since the program began July 1, 1956, to 2,266 miles—at a cost of $592 million.

During September, 360 miles were placed under construction, bringing the total of projects on which construction was under way to 3,491 miles, at an estimated cost of $2.09 billion. An additional $1.69 billion has been authorized or spent for preliminary engineering work and acquisition of right-of-way.

National Gypsum plant purchased

THE FRANCE STONE CO., Toledo, Ohio, has bought the closed National Gypsum Co. plant in Luckey, Ohio. The plant building is being equipped with new machinery, and France Stone Co. plans to have it in full operation this spring. Main product will be crushed stone. The plant, closed about four months ago, had been in operation 35 years. END



CLEANER SANDS . . .

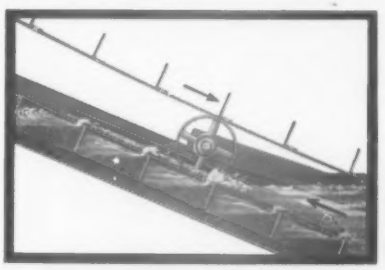
more efficient de-sliming

. . . with the "OVERDRAIN" Classifier

The "Overdrain" Classifier is a completely new device in the field of mechanical wet classifiers. The belt, with lifting flights attached beneath, moves upwardly out of the sand bed between two stationary side shrouds—creating the effect of a series of moving, closed, washing compartments.

The only outlet from these compartments is via holes in the belt above. Surplus liquid and slimes discharge through these "overdrain" holes without mixing with the oncoming sands. The end result is an extremely clean sand discharge, excellent de-sliming—making the "Overdrain" Classifier an ideal washing device.

Write for Hardinge Catalog 39-C— 7



Section through "Overdrain" Classifier showing upward-moving, closed, washing compartments.



Unretouched photograph of "Overdrain" action above the belt—water and slimes discharging upwardly.

HARDINGE

COMPANY, INCORPORATED

YORK, PENNSYLVANIA • 240 ARCH ST. • Main Office and Works

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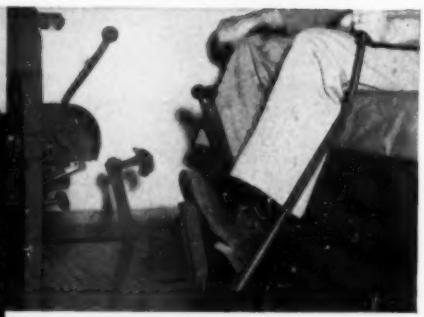
FEATHER-TOUCH CONTACT

As the TD-24 pusher approaches the Payscraper, operator slows tractor speed *with one hand* by power-shifting planetary system; and by depressing the foot decelerator. He gets feather-touch contact without declutching, brake-riding, or throttle change!



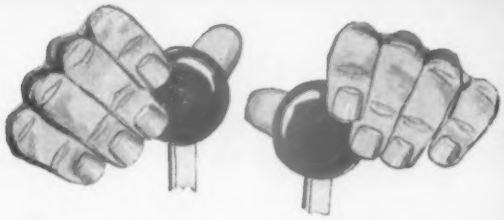






HIGHER REVERSE

Operator uses decelerator pedal to slow engine at end of pusher run, permitting faster reverse shifting. Fast reverse speeds, coupled with power-shifted planetary steering system, allows TD-24 operators to reposition pusher extra fast and reduce scraper pick-up time.



Your operators have fingertip control of greater push-loading profits because...

PLANET-POWERED "24's" beat other rigs on all four steps of the push cycle!

"CONSTANT CONTACT" LOADING

Releasing foot decelerator instantly applies full power, for efficient loading. Power-shifting either track into high range maintains solid pusher contact on curves—applies TD-24's full power, through both tracks!



GEAR HIGHER KICK-OUTS

Once scraper is fully loaded, the TD-24 *follows through* as operator power-shifts on-the-go with one hand to higher gear range, boosting speed of both units 27%. This allows most scrapers to come out of the cut a gear higher.



Your push-loading profits are in your operator's hands. And your operators know they can load out more scrapers every shift when their hands control the boss of the borrow pit—the International TD-24 crawler. The four-step pusher cycle (shown) pinpoints reasons why your operators and TD-24 pushers can increase production with easier control—from contact through kick-out.

Only the TD-24 gives you this big difference in pushers: more productive effort at the fingertip command of your operators! Exclusive Planet Power steering lets your operator: 1) keep pusher speed matched to that of the scraper; 2) power shift either or both tracks up or down a full speed range with a mere flick of the finger; and 3) apply full power to both tracks even if scraper cut is made on a curve.

And your TD-24 operators can fully utilize the decelerator pedal to cut maintenance costs three ways. The decelerator reduces engine clutching; eliminates brake pedal riding for steering; and permits feather-touch scraper contact without slam-bang jarring of operators and machines.

Get all of these TD-24 features that cut the cost of loading out paydirt, with either a Torque Converter or gear-drive tractor best suited to your needs.

If you're a dirtmover, get the TD-24 stay-on-the-job story by checking with any of the thousands of owners. Ask about the comparative life of such important components as track rollers and rails, engine, transmission, and planetary steering system. Get a TD-24 on your job today by calling your International Construction Equipment Distributor for a demonstration. Then you'll see how the TD-24 earned the right to be called "Boss of the Borrow Pit."

International® Construction Equipment

International Harvester Co., 180 North Michigan Avenue

A COMPLETE POWER PACKAGE: Crawler and Wheel Tractors . . . Self-Propelled Scrapers . . . Crawler and Rubber-Tired Loaders . . . Off-Highway Haulers . . . Diesel and Carbureted Engines . . . Motor Trucks . . . Farm Tractors and Equipment.

These are the profit-proven that lead to Payhauler® fleet

Look into the rock-lugging, grade-beating 24-ton "95"...

- **Bonus-powered,** with a 335 hp high-torque turbo charged diesel engine to beat steep grades and high altitudes with full payloads!
- **Your choice of torque converter** with powershift, or 9-speed constant mesh transmission. Speeds to match every load and road.
- **Shock-cushioning** of planetary drive axles.
- **Massive frame stamina**—with 277 lbs. of high-strength, shock-resisting steel for each rated ton of carrying capacity.
- **Springs with extra leaves** and **extra length** to cushion the payload, smooth the ride.
- **Positive power-steering, Torqmatic braking,** panoramic vision, for unmatched operating ease and load-speeding safety.
- **Up to 25% higher hauling speeds**—the "95" can high-ball, fully loaded, up to 38 mph.
- **Faster reverse speeds**—for spotting to load, or positioning full loads for dumping. The gear-drive "95" can travel up to 7.1 mph. in reverse.
- **9-second dumping**—another cycle-speeding feature.

...and the 250-hp, 18-ton "65" has equally outstanding features.

International® Construction Equipment

International Harvester Co.
180 North Michigan Ave., Chicago 1, Illinois

A COMPLETE POWER PACKAGE: Crawler and Wheel Tractors... Self-Propelled Scrapers and Bottom Dump Wagons... Crawler and Rubber-Tired Loaders... Off-Highway Haulers... Diesel and Carbureted Engines... Motor Trucks... Farm Tractors and Equipment.

Power for steep grade climb-outs wins steady job for five "65's"

Bonus Turbo Charged Diesel power to deliver extra-tonnage loads up a haul road with a 17% average grade accounts for the dependence of Caldwell Engineers on five "65" Payhaulers—on the $13 million hydro and flood-control Oliver Dam, Columbus, Ga.



Contractor doubles load delivery speed with positive Torqmatic braking!

Central Pennsylvania Quarry and Stripping Co. credits *Torqmatic braking* of their 5-unit "95" Payhauler fleet with doubling load delivery speed—by increasing safe downhill hauling speeds! They've compared "95's" directly to other off-road equipment on rock-hauling duty!



features ownership!

Prove what it means to command the Payhauler ratio of power to payload—for hauling up to 25% faster; beating grades and altitude. Try Payhauler "pick-up-truck" spotting ease—"zip-around" power steering—exclusive high reverse—and all the other Payhauler advantages. See your International Construction Equipment Distributor for a demonstration!



High-percentage availability proves inbuilt stand-up-ability!

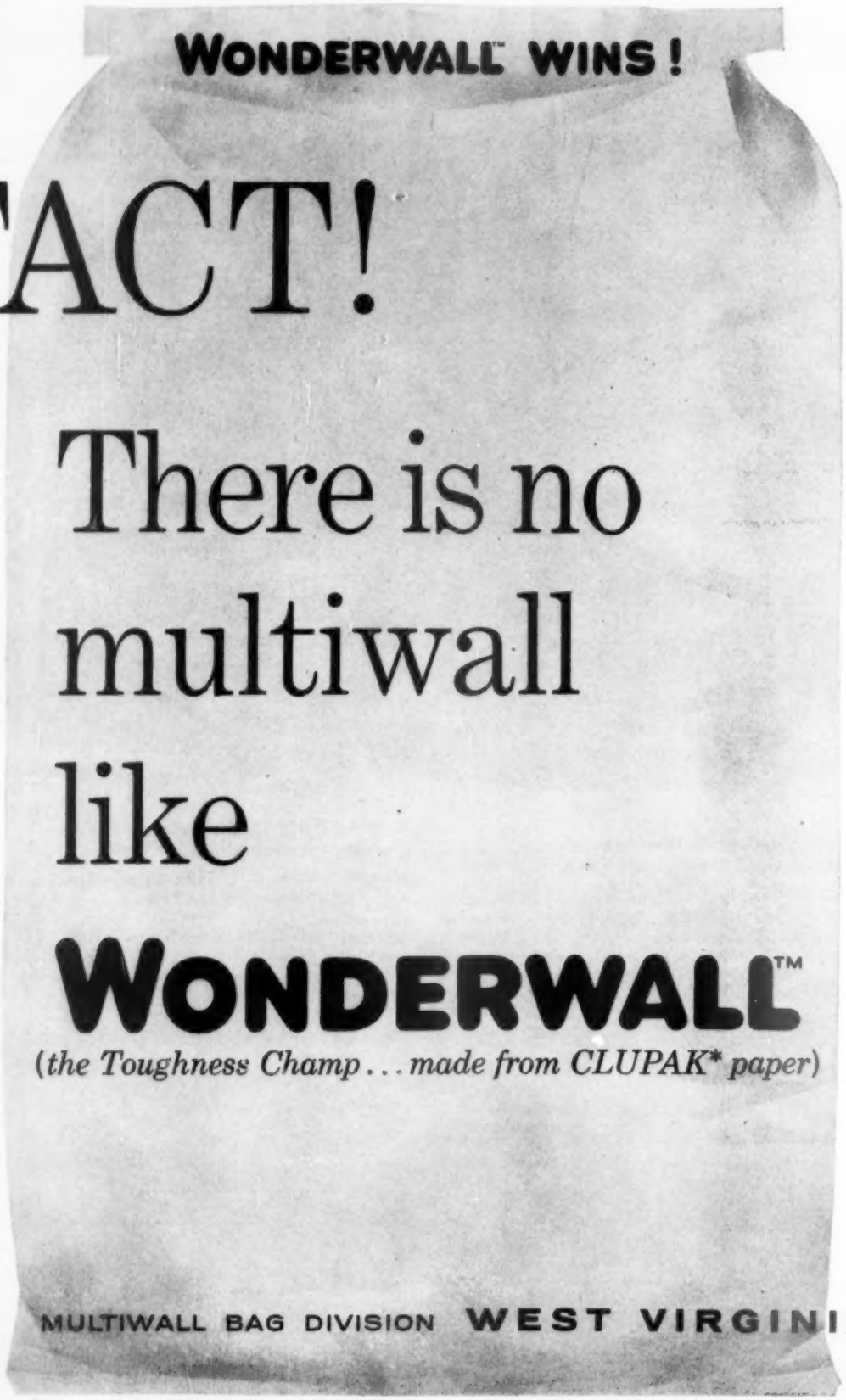
98.5 work availability through one measured 12-week period is the mark set by a 10-unit "95" Payhauler fleet—high-balling rock over steep High Sierra grades, on mammoth Pool Hydro Project, for Southern California Edison Co. Such records result from reserve power, reserve frame and transmission strength, and reserve shock-resistance!

Another thirty "95" Payhaulers join Merritt-Chapman and Scott fleet!

Merritt-Chapman and Scott Corporation has added thirty more "95" Payhaulers to their Niagara Power project equipment spread. Now, the M-C and S Payhauler fleet totals 62 units—largest in the world! On St. Lawrence Seaway, huge Glen Canyon dam, and Niagara Power Project, M-C and S have proved rock-lugging, grade-beating Payhauler performance—and confirmed their satisfaction with repeat orders.






WONDERWALL™ WINS!
FACT!
There is no multiwall like
WONDERWALL™
(the Toughness Champ . . . made from CLUPAK* paper)
MULTIWALL BAG DIVISION WEST VIRGINIA

WONDERWALL™ WINS!

PROOF!

WONDERWALL is the great new development in multiwall bags that makes all ordinary bags old-fashioned. Proof? Here it is! And it's from the field itself—from the roughest, toughest "testing ground" of all! Read what cement and plaster manufacturers are saying about WONDERWALLS.

"The last seven cars of gypsum cement plaster, shipped in WONDERWALLS (total basis weight 160#), had only 14 broken bags out of 4200. We think this is amazing when compared with our past experience on regular kraft (total basis weight 180#)."

"In packing 94# of Portland Cement, we tried 150-pound basis weight WONDERWALLS *and had excellent results. The bags were filled, with no breakage. They gave us quicker loading. We had no breakage in transit and we noticed great cleanliness of plant and cars."*

"About packing 70# of mortar cement, we have this to say.* WONDERWALLS *were easier to handle, packed faster, valves closed better than ordinary kraft."

The proof keeps piling up—WONDERWALLS outperform ordinary multiwall bags. Reason: they're made of remarkably tougher Clupak paper—the paper that stretches . . . the paper that "soaks up" the wallops without failing where ordinary kraft breaks.

WONDERWALLS pack faster, handle easier and stack firmly, too. They add up to greater efficiency and lower costs. And—best of all—they don't cost any more than old-fashioned bags. Let us include a trial shipment of 5,000 WONDERWALLS in your next order.

**Clupak, Inc.'s trademark for extensible paper manufactured under its authority.*

PULP AND PAPER COMPANY
230 Park Avenue, New York 17, N. Y.



Enter 1526 on Reader Card

HINTS AND HELPS

Profit-making ideas developed by operating men



Crane does everything but thread needles

THIS UNGAINLY LOOKING, stork-like machine is the product of the ingenuity of a manufacturer who saw the need for a crane to move things horizontally as well as vertically.

The delighted maintenance men in an eastern cement plant call it a "cherry-picker," because the unit can do practically everything except thread needles for them. It has been used to load and unload boxcars; the hydraulically operated boom snakes heavy machinery around in restricted spaces with the greatest of ease. Here it carries welding equipment into the quarry and the boom will put the welding rig right where the operator wants it.

Big trucks



THEY DO THINGS in a big way in the wide open spaces of the far West, particularly when millions of tons of sand and gravel must be hauled for miles over barren, rugged terrain from the pit to the job.

This western gravel company uses trains of trucks to haul four sizes of aggregates five miles from the processing plant to the batch mix plant.

One of these big elephants will haul as much as 45 cu. yd. of material, with 33 cu. yd. in the first car and the second holding 12 cu. yd. Every 26-wheel rig is diesel powered, and the aggregate producer built the truck bodies. Too big to go on public highways, they are operated on a private road.

Transmission belting

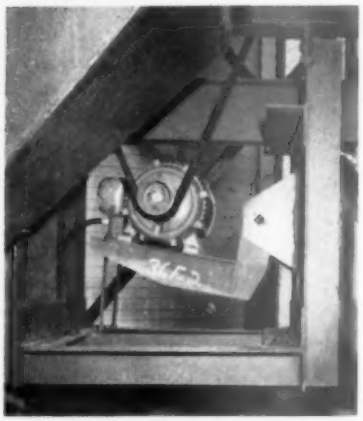
MOST SEGMENTS of the rock products industries now use enclosed reducers or short-center V-belt drives, but the subject of transmission belting is far from obsolete. New and better designs of long center drives and greatly improved belting are both now available for applications where other drives would be uneconomical.

For example, we know of a 300 hp. drive with a steam engine hooked up to a generator through a 26-in.-wide belt. During all the years of operation, maintenance cost about $200 annually and transmission efficiency was low.

After several expensive experiments on his own, the owner was delighted to discover that thinner belts were available which had a higher coefficient of friction. A new belt along with an automatic tensioning device brought wonderful improvement. At the same time, maintenance has been almost eliminated, the new drive is producing far more power than the old and the thinner belt shows no sign of deteriorating.

W. F. Shaphorst
Newark, N. J.

Swing your motor



ONE OF THE THORNIEST little details of designing a drive for machinery that works outdoors is how to make a takeup which will be absolutely foolproof and yet easy to adjust.

The design engineers for a new aggregates plant in Minnesota came up with this design to support the motor which drives a large roll crusher. The motor is bolted securely to a plate welded to a hinged arm. Adjustment is maintained by changing the relative position of the hinged assembly by adjusting threaded rods.

The motor is always perfectly parallel to the axis of the driven pulley. Adjustment of the takeup screws is always visible and readily changed to give the desirable amount of tension in the V-belts.

(Continued on page 73)



New motor development obsoletes today's application practices!

Only from Allis-Chalmers!

Super-Seal motors save up to 60%

Here's an amazing advance in motor technology! It's the *Super-Seal* motor line—an open motor design so completely unaffected by moisture, dust, dirt, oil, acids and alkalies that it can be used in many applications previously requiring more costly enclosed motors. *Savings range from 15 to 60%.*

Super-Seal motor superiority results from two distinct revolutionary insulating techniques. Available in any integral horsepower size, smaller *Super-Seal* motors incorporate a *Poxeal* stator. A durable epoxy resin encloses the stator, creating an electrical system impervious to outside elements.

In larger sizes, *Silco-Flex* insulation is used. In this system, silicone rubber is vulcanized into a homogeneous mass to form a flexible, moisture and heat resistant, void-free dielectric barrier around coils and leads.

Both of these insulation systems are unsurpassed. Proof? An encapsulated motor ran for hundreds of hours at full load in a 4% brine solution.

Find out more by reading the next pages; then contact your A-C representative or distributor, or write Allis-Chalmers at address shown on back page.

ALLIS-CHALMERS

518 9100

Two revolutionary insulating techniques developed and pioneered by Allis-Chalmers mean savings of millions of dollars for motor users . . .



New open motors are unaffected by moisture and contaminants

Modern insulating materials and new methods of application, now available in *Super-Seal* open-type motors, are drastically changing motor application standards. These insulations are so completely impervious to moisture and contaminants that *Super-Seal* open motors can be used in most applications formerly requiring costly enclosed designs. Existing applications have resulted in savings as high as 60%.

Basic insulation systems

Larger *Super-Seal* motors with form-wound stator coils use the *Silco-Flex* insulation system. Heart of this system is a remarkable rubber-like silicone elastomer, applied in semi-cured state and vulcanized to form a void-free, impervious dielectric barrier. More than four years of development and field testing have proven the superior electrical and physical properties of *Silco-Flex* insulation systems.

Stator coils of smaller random-wound motors are protected by equally effective *Poxeal* insulation system. A tough, durable case of epoxy resin completely seals the winding end turns and slot portions. Bonded to the stator laminations, it forms a seal completely impervious to contaminants.

Moisture resistance

In addition to being void-free, the silicone elastomer used in *Silco-Flex* insulation is moisture repellent. Even in high humidity, moisture does not form a surface film of condensation. Coils with this protection can operate completely immersed in water. In fact, one of the recommended cleaning procedures is use of detergent and water.

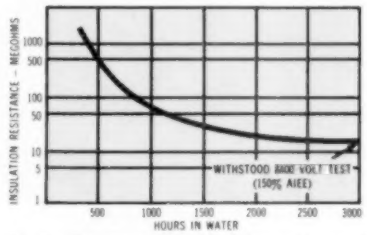


Fig. 1—Test curve shows insulation resistance of *Silco-Flex* insulation while immersed in water.

Moisture resistance of *Silco-Flex* coils is demonstrated in Fig. 1. After more than 3000 hours of total immersion with 2300 volts impressed on the coil, the test was terminated when it became apparent that little more drop could be expected in the coil's insulation resistance. At that point the coil still withstood a high potential test of 8400 volts without injury.

Encapsulated stator windings are equally well sealed. Motors with *Poxeal* insulation protection have been thoroughly tested under water while operating with full load and full voltage.

Resistance to contaminants

Silicone elastomers and epoxy resins are relatively inert to attack by practically all reactive agents. Further, the void-free construction of insulation systems used in *Super-Seal* motors prevents penetration of contaminants. As a result, *Super-Seal* motors are unaffected by oils, most acids, salt solutions, alkalies, and oils and are ideally suited for such applications.

Thermal stability

Temperature-wise, *Silco-Flex* insulation can easily withstand hot-spot temperatures of 200 C and more—

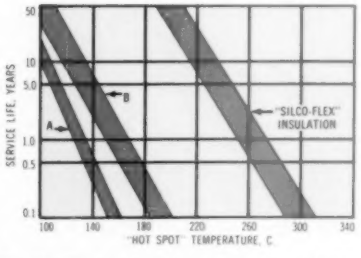


Fig. 2—Chart shows that *Silco-Flex* insulation more than meets Class H requirements.

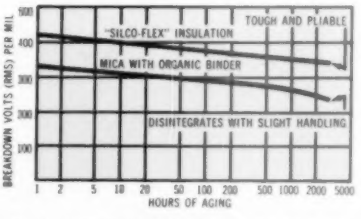
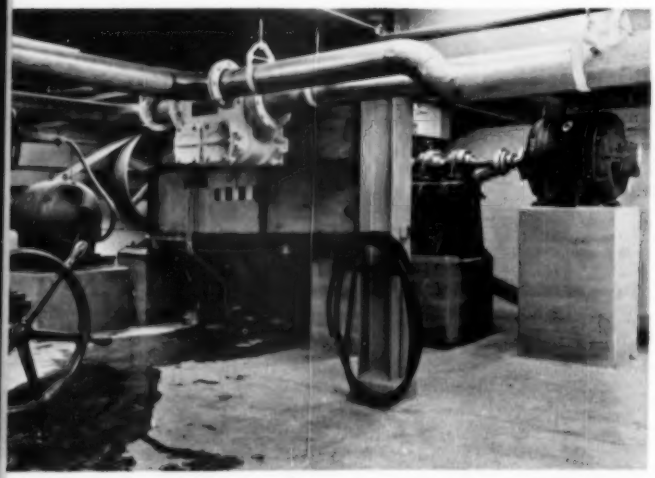


Fig. 3—Tests of 2300-volt insulated bars show thermal stability of *Silco-Flex* insulation.



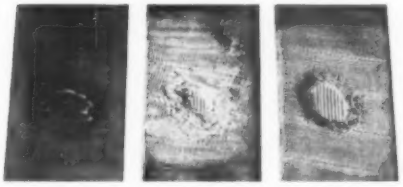
Paper mills have wide application for *Super-Seal* motors because of moist atmospheres.

easily meeting Class H temperature requirements (Fig. 2). At temperatures where the life of Class B coils would be measured in weeks, the life span of *Silco-Flex* coils is well beyond machine obsolescence.

Comparison with a mica-organic binder insulating system (Fig. 3) offers further proof of thermal stability. After 2000 hours of aging at 200 C with 8500 volts applied continuously, the *Silco-Flex* insulated coil was still tough, pliable, and completely serviceable. The mica-taped insulation had deteriorated to the point where it disintegrated readily and was completely useless.

An added advantage of *Silco-Flex* insulation is unusually high thermal conductivity — about twice that of conventional insulations. This means heat dissipates faster from its point of generation.

Poxeal insulation also demonstrates remarkably good thermal stability. Materials now in use are suitable for Class B temperatures, although actual classification of the insulation is determined by the basic material used.



Silco-Flex Insulation | Polyester Mica Tape | Asphaltum Mica Tape

Fig. 4—Samples of motor insulations after sandblasting give comparison of abrasion resistance.

Abrasion resistance

Resistance to abrasion is still another point of superiority in the insulation systems used for *Super-Seal* motors. Abrasion resistance of *Silco-Flex* insulation is compared to other types of insulation in Fig. 4. After one minute of sandblasting with 90-grit aluminum oxide and 100-psi air, only slight surface erosion appeared on the *Silco-Flex* sample. Other insulations were eroded to bare copper.

Application practices obsolete

The superior qualities of *Super-Seal* insulating systems, developed by Allis-Chalmers, make it necessary to reappraise present application practices. With virtually ageless insulation, *Super-Seal* motors assure more reliable service and require less upkeep than the best protected, conventionally insulated machines — and at considerably less cost.

Super-Seal, Poxeal, and Silco-Flex are Allis-Chalmers trademarks.

CHRYSLER KIMBERLY-CLARK GOODYEAR SOUTHERN CEMENT CONTINENTAL CAN AMERICAN OIL CELOTEX SCOTT PAPER HURON PORTLAND CEMENT FORD FIRESTONE PACIFIC GAS & ELECTRIC STANDARD OIL OF INDIANA B. F. GOODRICH DOW CHEMICAL MARLEY INGERSOLL-RAND LINK-BELT

WIDE ACCEPTANCE

of Super-Seal motors proves their advantages

Cement, petroleum, chemical, steel, mining, paper, utilities, municipalities and general industry — outstanding corporations in every field are specifying *Super-Seal* motors wherever operating conditions are tough.

Cost and *superior insulation* aren't the only reasons. Users are getting MORE MOTOR, too. Here's why:

Standard totally-enclosed motors, 55° C rise, have a *service factor of 1.* In other words, "nameplate" horsepower is the maximum. A 40° C rise *Super-Seal* motor with *Poxeal* insulation, and a 60° C rise *Super-Seal* motor with *Silco-Flex* insulation have a *service factor of 1.15.* For comparisons on what this difference means in required motor sizes, see this chart:

Rated Horsepower (Maximum Hp, TEFC)	Maximum Continuous Hp—*Super-Seal* Motor
15 hp	17.25 hp
25	28.75
40	46
75	86.25
125	143.75
200	230
350	402.5
500	575

Join the swing to *Super-Seal* motors. It will pay dividends fast. Contact your A-C representative or distributor, or write Allis-Chalmers at address shown on back page.

ALLIS-CHALMERS

SOUTHERN CALIFORNIA EDISON LONG ISLAND LIGHTING AVCO UNION BAG UNIVERSAL ATLAS UNION CARBIDE OHIO OIL INTERNATIONAL PAPER SOUTHERN PACIFIC PIPE LINE ALCOA ROHM & HAAS ARMOUR SHELL OIL COMMONWEALTH EDISON OWENS-ILLINOIS WYANDOTTE CHEMICAL BETHLEHEM STEEL ALLEGHENY-LUDLUM MEAD DU PONT DETROIT EDISON ESSO HERCULES POWDER SINCLAIR PIPE LINE GENERAL TIRE MONSANTO

This *SUPER-SEAL* MOTOR application SAVED $3000!



Find out how much you can save

This application of a *Super-Seal* open-type motor — in place of a weather-protected design of the same rating — *saved the user $3000.00!*

You can achieve similar savings! Fill out the data sheet below and *find out for yourself how much you can save — on a "no-strings-attached" basis.*

Here's what to do: 1) Select an enclosed motor application in your operations (a new motor need or, for comparison, a motor just purchased); 2) fill out the data sheet; 3) mail to the address shown.

We'll give you a cost quotation on a *Super-Seal* open motor for that application.

Fill out this data sheet—

no strings attached—to find out how much you can save on a new motor or on an existing motor installation

To: **ALLIS-CHALMERS**
888 S. 70th St., Milwaukee 1, Wis.

Motor Data

1. Type (i.e., squirrel cage):

Horizontal ☐ Vertical ☐

Hp..... Rpm.....

2. Phase..... Frequency.....

Voltage.....

3. (For synchronous only)

Power factor.....

Starting torque.....

Pull-in torque.....

Pull-out torque.....

Application Data

4. Description of application:

5. Drive: Direct-connected ☐

V-Belt ☐ Other:.....

Starting load.....

Ambient temperature.....

6. Operating conditions:.....

Dirty ☐ Clean ☐ Wet ☐ Dry ☐

Other.....

Information on Existing Motors

(for comparison)

7. Type of insulation

Type of enclosure

Time rating.....

Temperature rise.....

Bearings:

Anti-friction ☐ Sleeve ☐

8. Special characteristics or construction:

NAME.....

TITLE.....

COMPANY.....

ADDRESS.....

A-5869

ALLIS-CHALMERS

HINTS AND HELPS

(Continued from page 68)

Hands off!

WHERE THERE ARE concentrations of big equipment as there are around rock products producers' plants, there is an attraction for teen-agers or childish adults who may commit acts of vandalism. However, a few simple precautions can go a long way to keep these people from toying with expensive machinery.

Here's one, developed by the owner of a big tractor in the Midwest. A simple sheet-metal box was cut and welded to fit securely over the ignition and starting button of the machine. Locked in place, it is sturdy enough to baffle anyone but professionals.





Wet cyclone installation improves efficiency

THE QUESTION COMES UP occasionally, "Is it necessary to install wet cyclones vertically?" Here's how an eastern sand and gravel producer answered his own question, by reclining his cyclones comfortably on their sides.

It was worth the cost to experiment, for they fit the flow of material and the structural supports much more readily in this position. After some months of continuous operation, the operators are convinced that they are getting better efficiency.

The horizontal arrangement of the cyclones made it possible to dispense with a pump in the circuit. Now pressure for the units is provided by a column of water in the steel tank right above them—plenty of constant pressure to operate the cyclones at top efficiency.

Water is delivered to the top of the column by a flume from the bottom of washing screens and is delivered to the individual units through a header. The amount of slurry sent through the cyclones can be adjusted by valves which bleed off part of the flow. Accepted sand is dropped to a storage pile while tailings are sent to a settling pond system.

Piggy-back conveyors keep raw rock flowing



HERE'S ANOTHER EXAMPLE of an acute need forcing the installation of an unconventional design. When a midwestern cement plant wanted to increase its capacity without shutting down long enough to remove and replace existing equipment, it was faced with the problem of how to bring in raw materials during changeover.

The happy solution proved to be the installation of another conveyor right above the old one. The piggy-back conveyor could be, and was, set up and bolted in place when the lower conveyor was not operating. By carefully scheduling the times for operating the old conveyor and fitting them into construction schedules, the work was completed without interrupting the flow of raw materials. Now each belt has a specific function; one for cement rock, another for shale and the third for clinker. It would be a very simple procedure to add a fourth conveyor if the additional capacity is ever needed.

Portable car spotter



THIS CAR SPOTTER is not only portable in the fullest sense of the word, but fully self-propelling. A California cement plant has found this unit to be one of the most useful gadgets around the plant. If it is needed to push a gondola or box car in some other area, it merely lets down its wheels and scoots off to do the job. **END**

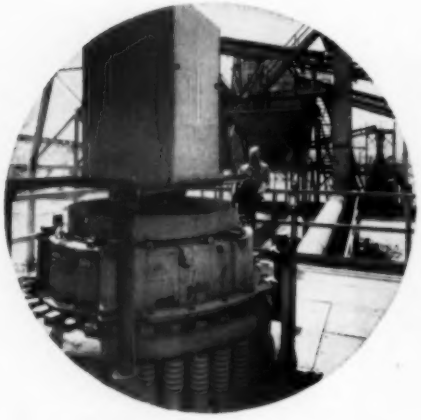
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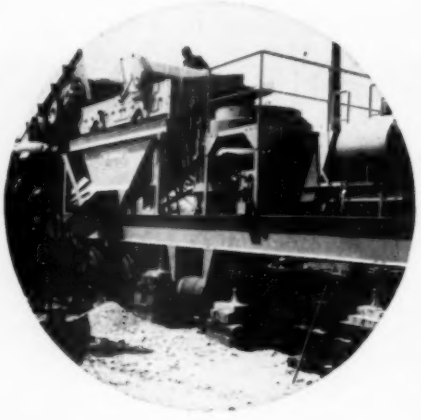
For in aggregate and sand production . . . *as in all of the great ore and industrial minerals operations the world over* . . . no record equals the performance of Symons Cone Crushers that have so consistently produced, economically and efficiently, great quantities of finely crushed product resulting in higher profit per ton per hour.

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FOR PORTABLE PLANTS

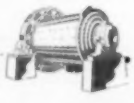
Symons Cone Crushers are being used in increasing numbers for portable and semi-portable crushing plants. Illustrated is a typical Cedarapids Intermediate Scalping Unit, using a 4-ft. Symons Cone Crusher. Unit is serving a large Midwest sand and gravel producer.

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SYMONS PRIMARY GYRATORY CRUSHERS



NORDBERG GRINDING MILLS



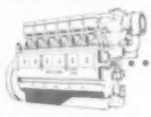
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The editors of ROCK PRODUCTS find

Another record year ahead for rock products industries

Highways, institutional building up for '59 – but industrial, home building lagging

ALL THE ECONOMIC SIGNPOSTS point to a steady continuation of business improvement in 1959. Although, in general, this will also hold true for the members of the rock products industries, some important reservations need to be made. A few cautious voices are being raised, in looking at the general picture, too. In effect they are saying, let's don't get over-exuberant about this booming economic comeback; let's take to heart the lessons to be learned from the recession of 1958; and let's don't go overboard for a cure called inflation which may turn out to be worse than the disease.

For example, Herbert Stein, director of the research division of the Committee for Economic Development, said recently: "It is likely the decision to step up the highway program, which has so far not resulted in much expenditure, will yet come back to haunt us. And we may have accustomed the housing industry to a still higher level of federal support. But, all-in-all, in retrospect, it appears that we managed to avoid the most damaging permanent burdens on the budget."

These cautious voices are few and far between because almost every economic factor susceptible of measurement points toward prosperous times ahead. These include:

1. Sizable increases in the gross national product since it fell to $425 billion in the first quarter of 1958. It increased to $440 billion in the third quarter and topped—by fourth quarter—the previous record of $445.6 billion set in the third quarter of 1957.

2. The industrial production index is increasing rapidly and by Fall of 1958 had climbed eleven points above the recession low in April.

3. Personal income is increasing steadily.

4. Unemployment is now under 4 million and is decreasing at a steady pace from its recession high of 4.8 million.

5. The average work week lengthened and overtime gained in the last months of 1958, indicating a sizable increase in production.

6. The rate of inventory liquidation is declining, dropping from an annual rate of $8 billion in the Spring of 1958 to less than $5 billion by year's end.

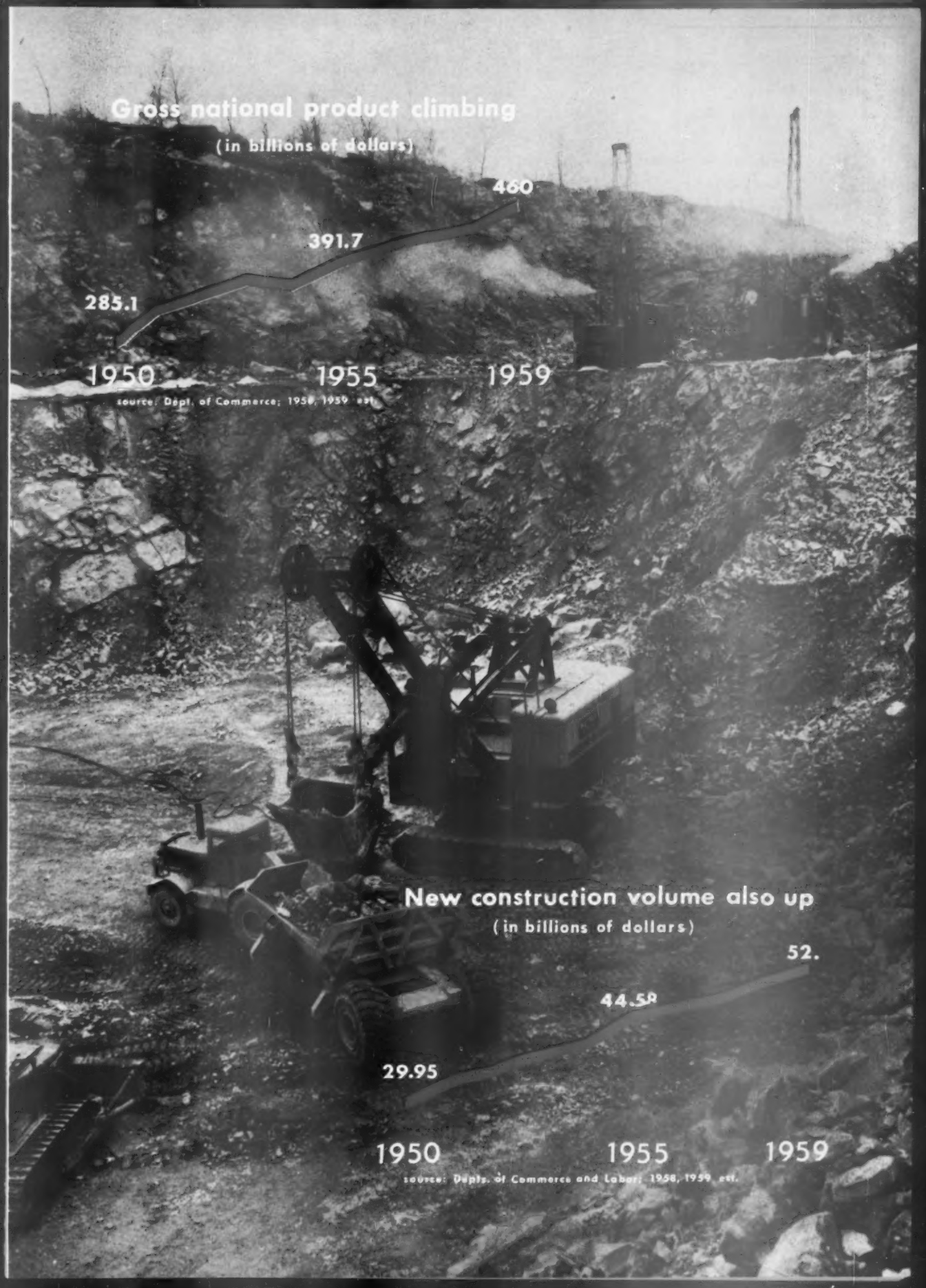
Construction outlook: modest gain. But in the aura of general prosperity, there are some soggy spots in the path leading to an equivalent boom in the field of construction activity. H. C. Turner, president of the Turner Construction Company—one of the nation's largest—sums up the construction outlook like this: "Total construction volume in 1959 will only be slightly larger than for 1958. Public awards should show a possible five percent increase this year due to the highway and continued school and public building construction. Industrial construction may be 10 to 20 percent lower than last year and less than 50 percent of the peak of 1956."

Actual figures for the first two-thirds of 1958 bear out this forecast in general, while offering somewhat brighter prospects. Here are likely strong spots in the construction economy for the new year:

1. Highways, up 9 percent over 1957, should increase further in 1959;

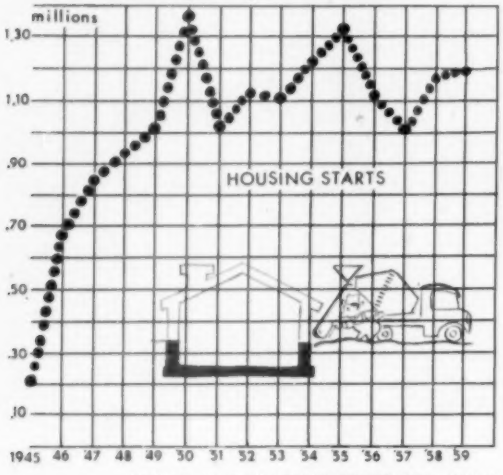
2. Public utilities, up 6 percent over 1957, should hold or extend this increase.

3. Institutional, social and recreational building, up a whopping 28 percent over 1957, should continue a strong source of construction revenue.


Gross national product climbing
(in billions of dollars)
460
391.7
285.1
1950
1955
1959
source: Dept. of Commerce; 1958, 1959 est.
New construction volume also up
(in billions of dollars)
52.
44.58
29.95
1950
1955
1959
source: Depts. of Commerce and Labor; 1958, 1959 est.

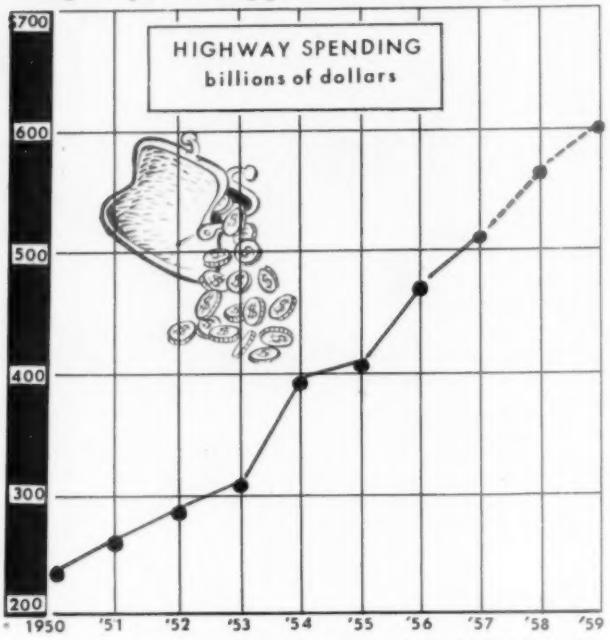


Homebuilding, financing woes, but a good year overall



1958-59 estimated by ROCK PRODUCTS; 1945-57 from Depts. of Commerce and Labor

Highways: a strong point in construction picture



1958-59 estimated by ROCK PRODUCTS; 1950-57 from Depts. of Commerce and Labor

The weak spots in this picture are industrial building, down more than 25 percent in 1958 from 1957, and housing, which made a strong comeback in 1958 but could dribble off in 1959, depending on available financing. One of the more significant questions in determining the economic outlook for the rock industries is: how long will the present housing boom last? In answering, the key word would appear to be: "caution."

The abundance of easy financing which made housing starts one of the few bright spots in an otherwise bleak economic picture in 1958 appears to be disappearing in the roseate glow of the growing business boom. As past commitments from lending institutions are used up, builders fear that growing scarcity—and rising costs—of mortgage money may keep many buyers out of the market.

As a result, most builders are taking a wait-and-see attitude toward the planning of housing starts next Spring. And this in spite of the fact that private housing starts have been climbing steadily from a nine-year low last February.

In September, they hit a rate of 1,220,000—highest for any month in three years; and October was more than 25 percent over the same month in 1957. However, this picture can change abruptly as lenders find interest rates on business loans and bonds more attractive than those on government-insured home mortgages.

As one eastern home builder put it: "Unless Congress puts at the top of its agenda a bill to let the mortgage market seek its own level, you're apt to see it hit a brick wall."

In the long range, however, almost every economic barometer points toward growing prosperity. Most significant of all, the gross national product in the United States is expected to increase some 40 percent in the next decade. During the same period, the labor force is expected to grow only 13 percent. Thus improved efficiency—mostly in the form of newer and better equipment and a growing trend toward automation—must pick up the slack. Commenting on this, Albert S. Burgoyne, vice president of the E. W. Bliss Company, said: "The machinery industry must provide the increase in productivity necessary to attain the forecast in gross national product. Consequently, machinery sales are estimated to increase 51 percent, from about $30 billion to $45 billion by 1965 in constant 1957 dollars."

To summarize, then: The general economic outlook for the nation, both in 1959 and in the foreseeable future is decidedly good. Construction lags behind the general picture in 1959 somewhat, because of a probable decline in home building starts and a sagging industrial building market. Highways, utilities and institutional building are expected to take up much of this slack, however, with industrial building taking an upturn in 1960 and thereafter, when recently completed industrial expansion programs prove insufficient to provide for growing demand for all sorts of goods. And an increasing trend toward automation can be expected to materially increase productivity in all fields in the decade to come.



Centralized plant control was mentioned often by those reporting in the ROCK PRODUCTS forecast survey as a labor-saving technical improvement they plan to make. All operations in this aggregates plant are controlled from the shed atop the tower

Sand and gravel — another record-breaking year ahead

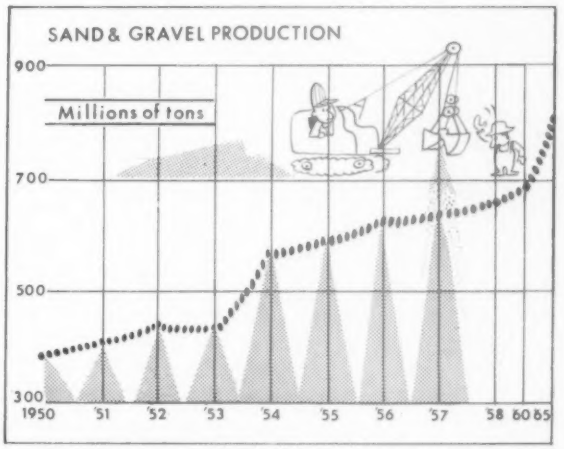
THE TWO MOST IMPORTANT FIELDS OF USE for sand and gravel—highway building and housing—are both presently on the upgrade. Highway activity will continue in this direction in 1959, while housing is still doubtful. Whatever happens to housing, sand and gravel producers are expected to set a record production year in 1959 on the strength of growing highway needs; if housing continues to burgeon as well, the gain could be spectacular.

Sand and gravel producers who returned questionnaires in the ROCK PRODUCTS survey expected 1959 production to increase more than 25 percent over 1958. This increase was expected to drop off to 16 percent in 1960, gain slightly to 18 percent in 1961, then level off with only a 3 percent gain in 1962. Although these figures are admittedly high, they indicate a powerful trend which should keep the sand and gravel industry decidedly healthy for some years to come.

The plants surveyed used only 69 percent of their available capacity in 1958; they hope to increase this to 83 percent in 1959. They also hope materially to increase their production efficiency. The tons of output per production man hour averaged 15 in 1957; this was increased to 17.9 in 1958, a gain of 19 percent. More than three-fourths of the sand and gravel producers expect to better this 1958 efficiency figure in the coming months.

But there will also be a considerable amount of plant expansion and new plant capacity to meet the growing demand. About 20 percent of the sand and gravel operators surveyed are planning new plants within the next three years, with expenditures averaging around $50,000 per plant. A slightly larger group is planning extensive modernization of existing facilities in 1959 or 1960. Expenditures in this category average out in the $15,000 to $20,000 area—although several companies have plans for modernizing programs which will cost in excess of $100,000.

Better and more efficient machine equipment, leading toward more and more automation, was



1958-65 estimated by ROCK PRODUCTS; 1950 to 1957 figures from Bureau of Mines





The cost-price squeeze is one of the top problems reported by sand and gravel producers. They explain that higher costs for labor and equipment necessitate higher prices, but that stiff competition often prevents this

reflected in the technical improvements—both present and future—named by the sand and gravel operators. Heavy media separation was most frequently mentioned as the development which has contributed most to present-day production efficiencies. Also mentioned frequently was centralized plant control, better cleaning and classifying equipment and improved crushing equipment aimed at enlarging crushing capacity. Future hopes for technical developments included methods of controlling sand gradation more easily and flexibly, larger trucks and crushers, and more reliable portable plant equipment.

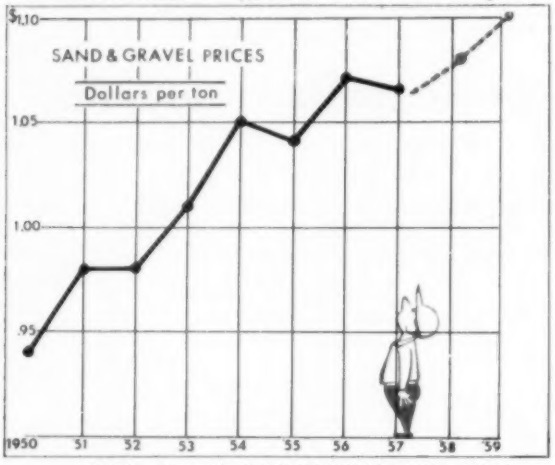
Sand and gravel prices among survey respondents held rather firm in 1958; only 14 percent raised prices, and then an average of less than 2 percent. Although about 35 percent expect to raise prices in 1959, the increase will still be slight, averaging out at about 3 percent.

Sand and gravel producers are pinning their expansionist hopes almost unanimously on the highway market; and they expect the growth here to be considerable. Estimates of increases in the highway market for sand and gravel averaged almost 20 percent. Other markets that the sand and gravel producers expect to grow are: construction at military bases, highway structures, schools, and flood control projects. Most producers didn't see any markets decreasing; those that did, singled out three: housing, railroad ballast and commercial construction.

Sand and gravel producers named a large variety of problems facing their industry today. The two most consistently mentioned were zoning difficulties and the growing squeeze between sand and gravel prices and the cost of doing business. Other industry difficulties for which the producers feel that solutions need to be sought include: consistent gradation and classification; lack of year-round markets; depletion of reserves; ascending labor costs; complexity of specifications and standards; cutthroat competition and price cutting; transportation costs; delinquent accounts; and haphazard highway planning by government officials.

To summarize: Sand and gravel will have its biggest year in 1959 on the coattails of the federal highway program. If housing holds up, it could be a banner year.

Sand and gravel prices to rise modestly



1958-59 estimated by ROCK PRODUCTS; 1950 to 1957 figures from Bureau of Mines

Cement markets growing, outlook good

ALMOST EVERY MEASURABLE long-range economic factor is favorable to the cement industry. Increasing population and its shift to metropolitan centers; the growing highway program with no forseeable end; more public works; growth of imaginative new applications of concrete— all of these factors point to strong markets for portland cement for many years to come.

A leading investment house recently purred over cement industry prospects like this: "The demand for cement is likely to be in a strong uptrend over the forseeable future, based upon projected public expenditures as well as on the outlook for private construction. Given this economic environment, a great number of cement companies appear attractive for new investment."

Indeed, the long-range picture is better than the immediate outlook for 1959. Capacity, which increased 8 percent in 1958, is now about 385 million bbl., but production in 1958 (at this writing) will be hard-pressed to exceed 300 million bbl. Thus the cement industry has momentarily caught up with demand—at least on a national basis.

Cement industry respondents to the ROCK PRODUCTS survey—accounting for about 20 percent of all cement production—predicted an increase of 6 percent in their 1959 production over 1958. They also indicated that increased demand

in 1959 would enable the industry to close the gap between production and capacity. The respondent plants operated at 79 percent of capacity in 1958; they expect to operate at 87 percent in 1959.

Between 1956 and 1958, the cement industry completed 21 new plants and enlarged and improved dozens of old plants, raising industry capacity by more than 90 million bbl. Yet, in spite of the fact that many industry leaders are alarmed about over-production, expansion of cement manufacturing facilities continues. Although only 5 percent of the survey respondents now have new facilities planned, almost one-fourth will have multi-million-dollar modernization projects underway in existing plants over the next two years.

The major uses of portland cement show little indication of sloughing off. Use of cement in highways has more than doubled in the last seven years, and will triple by 1961; this market took about 70 million bbl. in 1958. Other publicly financed construction—such as flood control projects and air and missile bases—are expected to show a similar sharp increase. And residential housing, which takes about 25 percent of portland cement production, is reviving and should show a steady upward trend, although there may be temporary setbacks along the way.

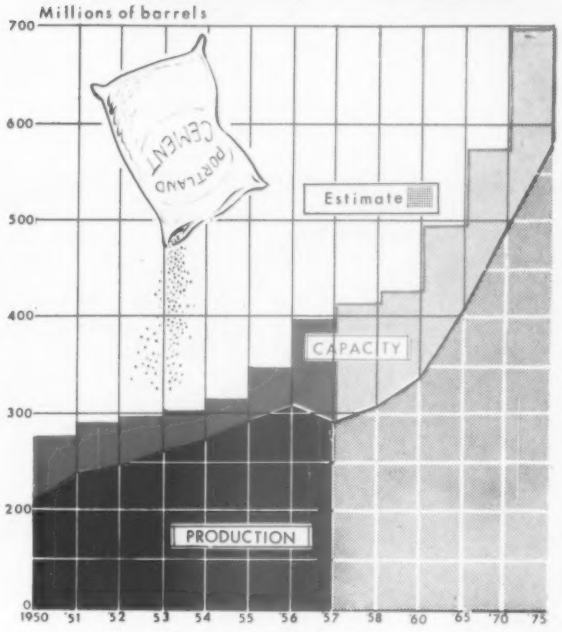
An overwhelming 90 percent of survey respondents singled out the highway market for increase in 1959—up an average of 10 percent. Returns were mixed on housing; some expected it to increase, others, to decrease. The only other area of agreement was on industrial construction; a number of companies expect it to decrease.

Among technical advances named in the returns, two showed up repeatedly. They were: (1) more (and more dependable) instrumentation and automation for the whole range of cement manufacturing equipment; and (2) better fuel efficiency. Also coming in for more than passing attention were better dust collection and the use of X-ray in quality control.

A loud and discordant note in the general chorus of prosperity in the cement industry is the rigid pricing policy into which a majority of the nation's cement companies have been forced in order to compete effectively. As a result, many producers are committed to a fixed price in 1959—in a period of steadily rising costs. Only sharply increased efficiency of operation can save some cement companies from a painful cost-price squeeze.

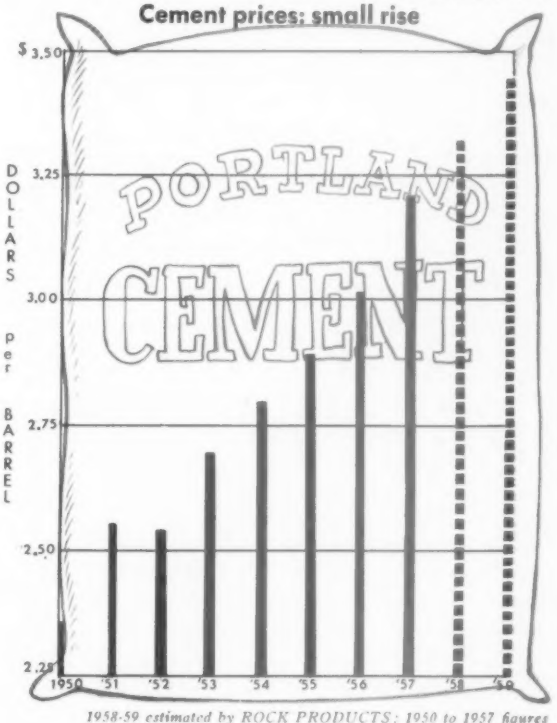
Among other industry problems mentioned specifically by several companies were: The increasing level of capacity in relation to demand for cement; growing need for highly trained personnel to operate increasingly complex equipment; inadequate depreciation allowances; deteriorating labor relations; and product quality control.

Cement production: up with building rise



1958-75 estimated by ROCK PRODUCTS; 1950 to 1957 figures from Bureau of Mines

Cement prices: small rise



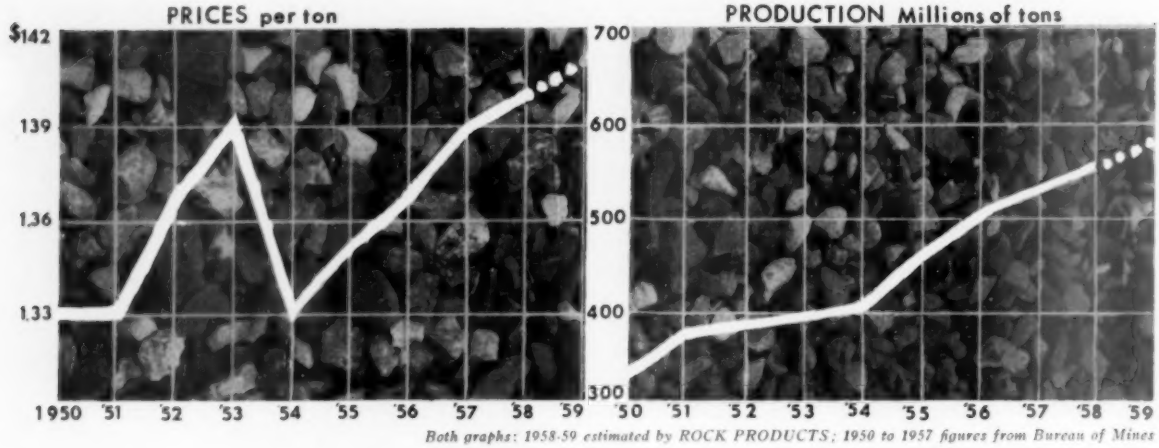
1958-59 estimated by ROCK PRODUCTS; 1950 to 1957 figures from Bureau of Mines

Summing up: Competitive difficulties within the industry may make 1959 less of a boom year than it should be, but all the signposts point to a long period of prosperity for the cement industry, with demand gradually closing the gap between production and greatly increased industry capacity.

Forecast continued on following page



Crushed stone: prices rise slightly, production up sharply



Both graphs: 1958-59 estimated by ROCK PRODUCTS; 1950 to 1957 figures from Bureau of Mines

Crushed stone — still growing with highway system

BECAUSE CRUSHED STONE PRODUCTION is tied in so closely with the construction of our nation's highways, another of the steady succession of growth years can be expected in the crushed stone industry in 1959.

Plants reporting in the ROCK PRODUCTS survey estimate an increase of 19 percent in production in 1959 over 1958. This is undoubtedly too high for the industry overall, but it reflects the optimistic outlook in the crushed stone field. The same operators expect production to increase an additional 17 percent in 1960, then trail off to a 12 percent gain in 1961 and 1.5 percent in 1962. Some of the gain will be reflected in more complete use of existing capacity—from 74 percent in 1958 to 80 percent in 1959. The rest will come from new plants and extensive modernization of existing facilities.

About 17 percent of the crushed stone operators reporting in the survey plan new plant construction in the next three years. Some of these new operations will be sizeable, with several of them in the 200,000-ton plus category. A much larger group is planning extensive modernization, with some 28 percent planning to renovate and modernize their plants in 1959 and 1960. Most of these are surprisingly ambitious in cost and scope, with over half running $100,000 or more.

Much of the increased crushed stone output will also come from production efficiencies. Tons per man hour for the operators reporting in the survey averaged 7.04 in 1957; a year later this figure increased to 7.32, a 4 percent gain. About two-thirds of the producers expect further production efficiencies in 1959.

Technical improvements singled out—both present and future—were tied in principally with blasting and drilling. New drilling equipment and better explosives—particularly improved blasting techniques and delayed fuses—were credited with much of the increased efficiency of production of crushed stone. Other present technical developments mentioned included improved conveying equipment, diesel shovels and bigger and better screens. Looking to the future, the crushed stone operators hope to see closed circuit television control of quarrying operations, automatic blending and weighing, and even better drilling and blasting equipment. Most of the improvements envisioned in the future involve automation—wrapped up in simpler, more effective design of equipment.

Crushed stone producers are staking their optimistic outlook for the years ahead almost entirely on the highway program. Asked where they expected markets to increase, almost all mentioned highways—with the estimates ranging between 10 and 20 percent as the amount of new highway business that would be generated in 1959. Decreasing markets were expected in two fields: housing and railway ballast.

Most of the producers expect price to remain rather steady next year. Only 18 percent of those who responded to the survey raised prices in 1958 (making an average increase in prices of only 1.3 percent over 1957). Slightly more—27 percent

—expect to increase prices in 1959, but again the increase is slight.

As for industry problems, crushed stone operators set two head and shoulders above all others: the cost-price squeeze and increasing difficulties with labor. Time after time, the survey returns pointed up the steadily increasing costs of doing business, particularly in labor and machine equipment, as opposed to virtually non-existent increases in the price of their products. Other problems which were mentioned frequently included: price cutting competition, particularly from portable plants with below standard products; specifications which are either too tough or too vague; broad variations in seasonal business; freight rates; and mounting delinquent accounts.

To summarize: As long as the highway program continues to boom, so too will the crushed stone industry—and it looks as if highways are going to be booming for some time to come.

Lime outlook brighter; gypsum continues high

OF ALL THE ROCK INDUSTRIES, probably the hardest hit by last year's recession was lime. Although there is some variance among people close to the industry as to how long it will take them to bounce back, on one point there is little argument: the lime industry had a very rough year in 1958. Lime shipments were down almost 20 percent, due mainly to the recession-racked steel industry which uses much industrial lime.

But on prospects for 1959, authorities are in general agreement that things are looking up:

—The National Lime Association predicts lime shipments will be up 15 percent over 1958, but still down 5 percent from 1957;

—Producers, themselves, who answered the ROCK PRODUCTS survey look for a gain of about 10 percent in production in 1959 over 1958;

—According to estimates of the Cement, Lime and Gypsum Workers Union: "In 1959, a slight improvement should come about in the lime industry due to increased operations of the steel industry, lime's largest consumer. Much depends upon the government's conservation program for continued use of agricultural lime. Lime for soil stabilization may come in for more use in the highway program in 1959."

A majority of the producers replying to the survey singled out the trend toward larger producers and the corollary squeeze on some smaller producers as the most potent industry problem.

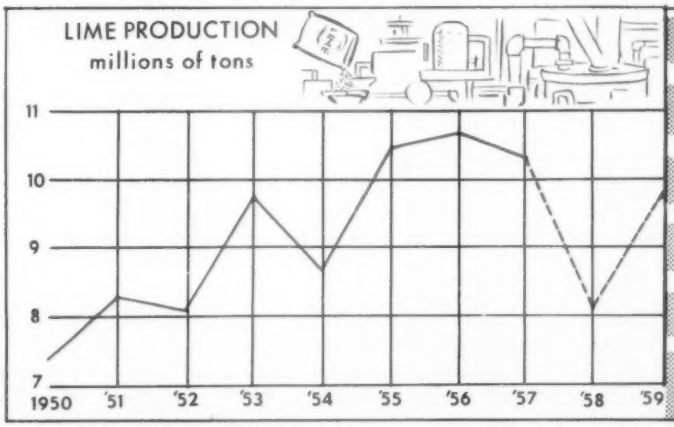
As one survey respondent put it, "Greatly expanding productive capacity of the largest producers permits reduction in unit costs and transportation rates that allows wider distribution. This competition cannot be met by small companies which are not able to increase efficiency or distribution as rapidly."

The resultant price cutting, say the producers, plus lower shipping and labor costs in certain areas of the country have put the squeeze even harder on producers who were already caught in the vise of rising costs that couldn't be assimilated in higher prices.

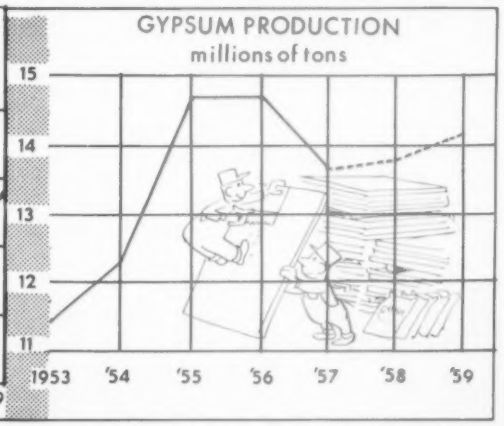
While growing steadily over the last few years, the uses of lime have been changing dramatically. Chemical uses have gained considerably as have refractory lime and the use of lime in soil stabilization. On the other side of the coin, building uses—mainly for plaster—have been decreasing just as steadily.

Among the present-day technical advances reported, the growing use of conveyor systems and

Lime production: recovery with economy



Gypsum production: holds up with home building



Both graphs: 1958-59 estimated by ROCK PRODUCTS; earlier years from Bureau of Mines



the consequent reduction in handling were singled out as the most useful. Also mentioned were the introduction of crude oil as a kiln fuel and the growing size and capacity of trucks and shovels. Looking to the future, the producers would like to see improvements in blasting and drilling equipment, and bigger and better conveyors, screens and rolling stock.

Summing up: Bouncing back in '59, in spite of some painful readjustments within the industry.

The gypsum industry will ride the current housing boom hopefully into 1959, striving to approach the record year of 1955 without really expecting to come very close.

Gypsum production in the United States—both of crude gypsum and gypsum products—is tied in intimately with the housing industry. When housing booms, so does the gypsum industry. And the surge in housing in the latter part of 1958 made a successful year after low first-half sales.

One large gypsum manufacturer reported: "Current bookings of new orders indicate some record high months coming up for sales and earnings."

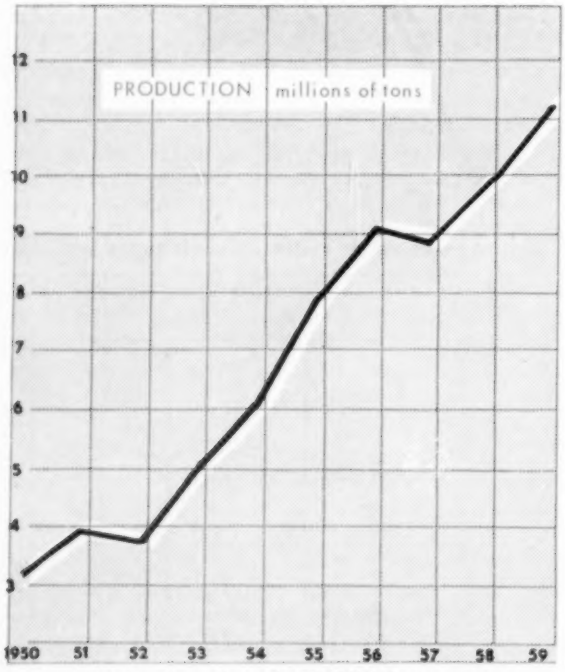
And two manufacturers of gypsum wallboard had this to say: "We have noted a steady improvement since March of 1958 and it is continuing."

"Sales in the first six months of 1958 were off about 15 percent from 1957, but business has improved to where year-to-date (1958) is about even with last year and improving."

There is still some doubt as to whether this trend will continue strongly through 1959. However, two factors make the gypsum outlook decidedly satisfactory: (1) whatever happens to housing in 1959, the chances of a major cutback in housing starts is not too likely; and (2) gypsum wallboard continues to gain steadily in popularity, thus taking a larger share of the housing market each year.

In view of these factors, crude gypsum production in the United States will certainly hold firm and possibly show some gain on the approximate 10 million tons of production in 1958.

Lightweight aggregates — continuing gains



1958-59 estimated by ROCK PRODUCTS; 1950 to 1957 figures from Bureau of Mines

THE PHENOMENAL GROWTH of the little giant of the rock products industries, lightweight aggregates, will continue through 1959—although at a slightly more subdued rate than the pace that enabled the industry to increase itself by almost ten times between 1950 and 1958.

The main problem facing lightweight aggregate producers is the one which relatively new products inevitably run up against: education of the people who will use the product. The lightweight aggregate manufacturers polled in the ROCK PRODUCTS survey named the education of architects, engineers, contractors and block producers to the uses and advantages of lightweight aggregates as the most important problem to which the industry should address itself. Other pressing problems named were: the need for developing new markets and the growing freight rates and shipping costs plaguing the industry.

Expansion plans in the lightweight aggregate industries are characterized more by their size than number. Although a relatively few producers are planning new or expanded facilities, the projects planned are ambitious—up to $500,000 in cost.



Producers report that their biggest problem is educating architects and engineers to the advantages of using lightweight aggregates

The strong position in which lightweight aggregate producers presently find themselves was summarized by one survey respondent who—when asked what markets he expected to increase or decrease—replied: "Our problem isn't so much analyzing markets as supplying them. The big difficulty in the lightweight aggregate industry at the moment is boosting production to meet the demand."

A wide variety of markets—including horticultural, all types of precast concrete structural members, cast-in-place concrete construction, and soil conditioning—were expected by the producers to increase in 1959. Only one was expected to decrease—the sale of lightweight aggregates for plaster.

Technical improvements, both present and future, evolved around various degrees of automation. Producers are seeking such mechanical aids as raw feed controls to provide greater product uniformity and central control systems for the entire processing operation.

Producers who answered the survey expect to increase production in 1959 by 28 percent over 1958. Much of this will be through growing use of present capacity, which operated at only a 58 percent level in 1958; this is expected to increase to 69 percent in 1959. Efficiency is expected to increase, also. The tons per production man hour among the survey respondents averaged 1.19 in 1957; this grew to 1.36 last year. About two-thirds of the producers reporting expect a further gain in efficiency in 1959.

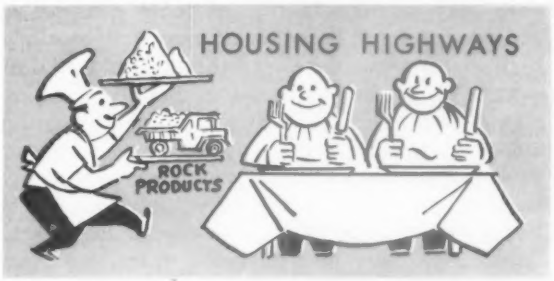
Slightly less than half the lightweight aggregates manufacturers reported that they raised prices in 1958; about the same number expect a small price increase in 1959, averaging out for the whole industry at slightly under 3 percent.

To summarize: Lightweight aggregates is a new and exciting field of production, facing growing pains of education and development of new markets, but offering a sizeable production potential which isn't yet in sight.

Suppliers, associations, labor agree: higher 1959 rock sales

IN ADDITION TO THE PRODUCERS who contributed the raw material from which the ROCK PRODUCTS survey conclusions were drawn, there are three other groups who are vitally interested in what's going to happen in the rock industries: the trade associations serving them, the unions which negotiate for industry labor, and the suppliers who make and sell the machinery without which the rock industries couldn't operate.

These three groups have some definite opinions on the economy in general and the outlook for each of the rock industries in particular. Although they vary somewhat in detail, they agree wholeheartedly on the broad proposition that things are looking up across the board. Specifically, here's how some of them replied to an invitation from ROCK PRODUCTS to unburden themselves on the future of the rock industries.



Builders of homes and highways demand more rock

The national economy. Like the producers, the associations, suppliers and unions are pinning their fondest hopes on the demands of highways and housing in a generally booming economy to keep the rock industries healthy and growing.

One supplier said: "Accelerated demand for rock products will be stimulated by increased housing (created by increase of population coming of age) and road building. However, it is unlikely there will be any great industrial expansion other than shifting of industrial operations to more favorable labor and tax areas."

Another ventured hopefully: "The road building activity will certainly stimulate the demand for aggregate producing and handling machinery."

Two more comments sum up rather well the general feeling on the subject of national and rock industry prosperity:

—"We can say that the outlook for our engineering and construction services to rock products producers is brighter for 1959 than it was all during 1958. Recent business inquiries appear firmer and more soundly based."

—"We expect this year to be better than 1958.



The upturn from the low point in the Spring of 1958 has now brought sales to the aggregate industry to near the peak we reached before the recession."

Need for increased efficiency. One point was stressed by all three groups: the need for increased efficiency to stand off steadily rising prices. All agreed that this was to be found through larger equipment and more automation.

Here are three typical comments in line with the general thinking on this subject:

—"To me, the most significant trend throughout the aggregates industry has been the tendency to install more and larger equipment in existing plants in order to increase hourly capacity to meet the slowly but nevertheless increasing demand as the road program gradually moves out of the planning and acquisition stages into the actual laying of pavement. Another apparent trend is the increasing number of producers who recognize the importance of replacing obsolete machinery with newer and more productive models. More and more producers are thinking in terms of "cost per ton" over the life of the machine in comparing prices."

—"New equipment will be more compact as economy of space becomes increasingly necessary. Stronger material developed through industrial research will make this possible. Simplicity of design and ease of installation will become primary engineering objectives. In order to save power, prolong the life of costly machinery and avoid wasteful down time for repairs, industry will be using new devices to cushion mechanical starts, reduce wear and tear on belts, gears and other moving parts, and improve product quality through controlled acceleration of processing equipment."

—"The upturn in business that marked the last half of 1958 is likely to continue, although cost reduction will remain a challenge to far-sighted industrial leaders. As wages continue to rise, it will be necessary to obtain higher productivity through the installation of labor-saving machinery. Producers with obsolete plants and antiquated methods won't be able to pare costs and meet competitors' prices."

Sand and gravel and crushed stone. The hopes for sand and gravel and crushed stone producers for a big year depend to a considerable degree on the extent of the public works programs undertaken at the various levels of government. And the prospects of their increasing seem very good indeed. Such is the consensus of thinking for these two rock industries.



More efficiency is needed to balance higher costs

Vincent P. Ahearn, Executive Secretary of the National Sand and Gravel Association, had this to say: "While it seems clear that home building, principal market for both sand and gravel and ready mixed concrete, will continue this year on about the same level as 1958, and that privately financed construction as a whole will maintain about 1958 levels, there will be stronger public works programs and consequently increased demands for sand and gravel both at federal and local levels. This will undoubtedly be reflected in increased demand of from 3 to 5 percent for sand and gravel and ready mixed concrete in 1959."

To this, J. R. Boyd, Executive Director of the National Crushed Stone Association, added: "The Federal Highway Program is now picking up fast which should mean a very definite pick up in production for crushed stone for the coming year."

Lime industry. The outlook for lime among suppliers, association officials and union representatives ranged from decided gloom over the disappointments of 1958 to a cautious optimism for the year ahead.

A concise analysis was offered by Robert Boynton, General Manager of the National Lime Association. Said Mr. Boynton: "1958 was the poorest business year for the lime industry since 1949. Lime shipments for the first eight months of 1958 showed a loss of 20 percent from 1957. The principal cause for this decline is the recession. Counting refractory lime, about 40 percent of all burned lime products are used in steel manufacturing. With the steel industry operating at low capacities of 50 to 60 percent during the first half of 1958, lime consumption by steel plants was reduced in direct proportion. Building and other industrial lime consumers were also adversely affected by the recession, but to a lesser extent. Changes in lime consuming manufacturing processes and lime recovery plants also contributed to the decline. Of all lime's many uses, only lime stabilization of roads showed an increase in 1958. However, 1959 should be a much better year. Steel production rose

gradually during the last quarter of 1958 and should operate at an average capacity in 1959. An increase in lime shipments of 15 percent over 1958 appears likely, but the figure would still be about 5 percent below the 1957 shipment level. Modest tonnage gains in other industrial uses for lime and road stabilization will also help shipments in 1959."

To this appraisal, Robert M. Koch, president of the National Agricultural Limestone Institute, adds: "The 1959 picture on the use of agricultural limestone is going to continue at about the 1958 level. Congress, which failed to come to grips with the overall conservation reorganization long past due, will not get around to it until 1960. If and when major changes are made in the federal program, the tonnage of agricultural limestone will be affected. Until that time, the tonnage is fairly well stabilized nationally, although there will be local variations, some of them violent, brought about by drought, flood and similar conditions. Those companies which put on a vigorous selling campaign can also bring about a change in their local picture."

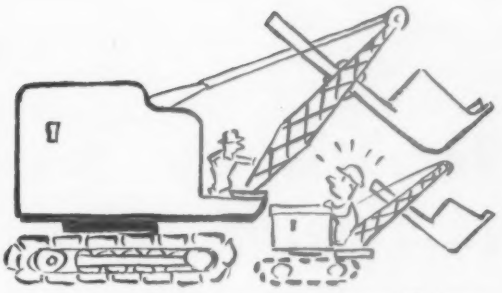
A leading supplier of heavy equipment to the lime industry is looking forward to better years ahead. He represents the views of many other lime industry suppliers when he says: "We are very much encouraged about the outlook for sales of machinery to the lime industry. The constantly increasing use of lime in chemical processes, the phenomenal increase in usage of lime as a binder in low cost highway and airport construction and the constantly growing need for water purification have resulted in more interest in this particular branch of our own industry than we have previously experienced."

Portland cement. Growing markets and burgeoning business are in the offing for the cement industry, although gains will be steady rather than spectacular.

Donald H. Kennedy, president of the Portland Cement Association, summed it up this way: "Bureau of Mines figures for cement shipments in the first nine months of 1958 indicate that the cement industry is participating fully in what has been called the 'best recovery ever recorded' from a recession. The figures show that shipments of portland cement rose rapidly during the third quarter after a disappointing first half, to produce a three-quarter total well ahead of 1957, and close to that of the record year of 1956.

"The joint forecast of the Departments of Commerce and Labor predicts an increase of 7 percent in total new construction in 1959—to an all-time high of $52.3 billion. This will produce a substantial increase in physical volume even if costs continue to rise.

"Highway construction is expected to increase



Larger equipment is one way to greater efficiency

12 percent, to $6 billion, in 1959. The joint forecast also predicts an increase in practically all other categories of construction with the exception of private non-residential. However, even this category may hold its own or increase if recent surveys of business plans for capital investment prove a guide.

"With an increase in construction predicted by most authorities for this year," concluded Mr. Kennedy, "and the rapid recovery in cement shipments evident in the second half of 1958, the outlook for the cement industry in 1959 seems most promising."

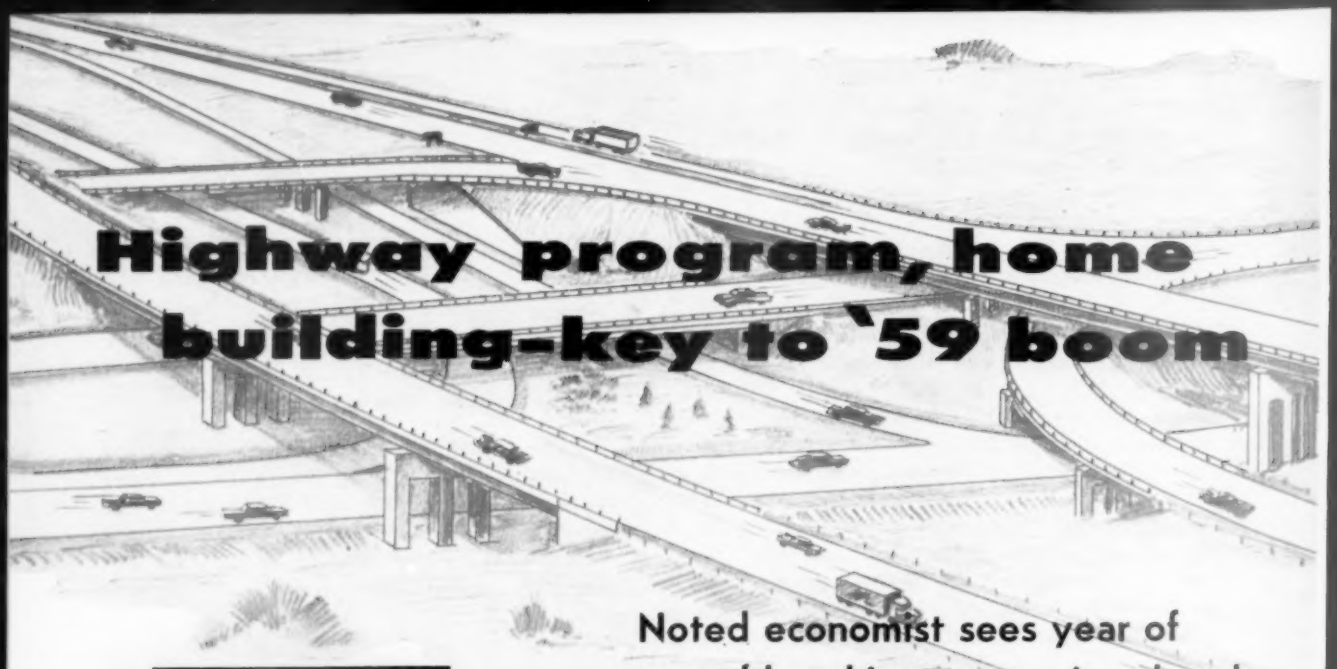
In this generally rosy outlook for portland cement, suppliers to the cement industry repeatedly underscored one important caution: the necessity for cutting manufacturing costs. Only in this way, say the suppliers, can the cement industry reap substantial profits from its remarkable program of expansion. Here are two suppliers' comments which express this point of view:

—"While it is true that the cement industry in the U. S. has now reached a point where potential capacity is equal to or slightly greater than potential demand, we believe that this will have a beneficial effect on our business. Obsolete machinery is being replaced with more modern and naturally more efficient equipment. The industry is fuel-cost-conscious and the indications are that they will spend increasing sums for changes or improvements to lower fuel costs per barrel of cement."

—"Cement manufacturers will have to concern themselves with simplicity of operation and reduction in maintenance. Over the last ten years, labor and material costs have increased on an average of 5 percent per year and this trend will continue in the future. It will pay rock industry producers, therefore, to adopt types of equipment that permit a minimum of maintenance and simplicity of operation, even if such equipment may involve higher first cost."

Labor speaks. The labor unions serving the rock industries have a very large stake in the future of these industries. They also have opinions on what is going to happen. The union most affected,

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Highway program, home building-key to '59 boom

Noted economist sees year of record breaking prosperity ahead for rock products industries



Rock Products' consulting economist, Peter B. B. Andrews, writes with authority on the trends and sales potentials of the nonmetallic minerals industry. As chairman of the 309-man Board of Analysts of Future Sales Ratings, he has forecasted on more than 100 leading industries of the United States for the last 24 years. The board is comprised of government and private-industry economists, statisticians and marketing experts, who in one form or another have access to every source of economic statistics in the world.

by Peter B. B. Andrews

THE ROCK PRODUCTS INDUSTRIES face in 1959 the biggest year in history. This will reflect a year of record-breaking prosperity ahead; these industries will buy more equipment and supplies in 1959 than ever before. A consensus of our Board of Analysts predicts an 8.6 percent potential increase in 1959 over 1958 in the purchase of capital equipment and supplies by the nonmetallic mining industry.

These expenditures are highly significant, since they indicate growing ability to expand product output, as well as the general prosperity of the rock products industries. The potential spending for new machinery and equipment is estimated by the board at $308.6 million for 1959, compared with about $284.1 million for 1958.

This is one of the strongest top-rated markets in the entire industrial structure. The only reservation generally placed by the board in making an optimistic forecast is that the promotional efforts of the companies selling to the rock products industries must be greater in 1959 to take full advantage of the outstanding sales potentials in this field over the next 12 months. On the other hand, weak promotional programs may result in minor gains, if any, in equipment sales over 1957.

The stepped-up highway-building program scheduled for the next 12 months is the main reason why the board gives top marks for 1959 to the rock products industries. Started in 1956 with the passage of the Federal Highway Act, the road-building program is just now beginning to gather steam.

The Highway Act originally appropriated $24.8 billion for the program, scheduled to be completed in 1969. These funds were paralleled 10 percent by state government appropriations, raising the total to $26.6 billion. Legislation passed in 1958 authorized the federal government to match state funds on a 66⅔ percent federal-33⅓ percent state basis (up from the previous 50-50 arrangement) for primary, secondary and urban systems. That adds another $22 billion for the 13-year period.

Combination of these amounts with normal



state, city and local road expenditures, which the board computes as likely to reach $50 billion, brings the aggregate to the staggering level of $100 billion for the 1956-69 period. Actually, the board believes that additional amounts will be appropriated as the program materializes, especially as costs continue to rise, and military requirements also may dictate certain additions. Up to this time, many of the funds for the program have been absorbed by engineering expenses and land purchases for rights-of-way. Settling down now to actual construction, building costs are expected by the board to average about 80 percent of the total for highway spending. For 1959 the board estimates the record-breaking increase of about 16 percent in new highway construction—up to the enormous new high total of around $7 billion for the year.

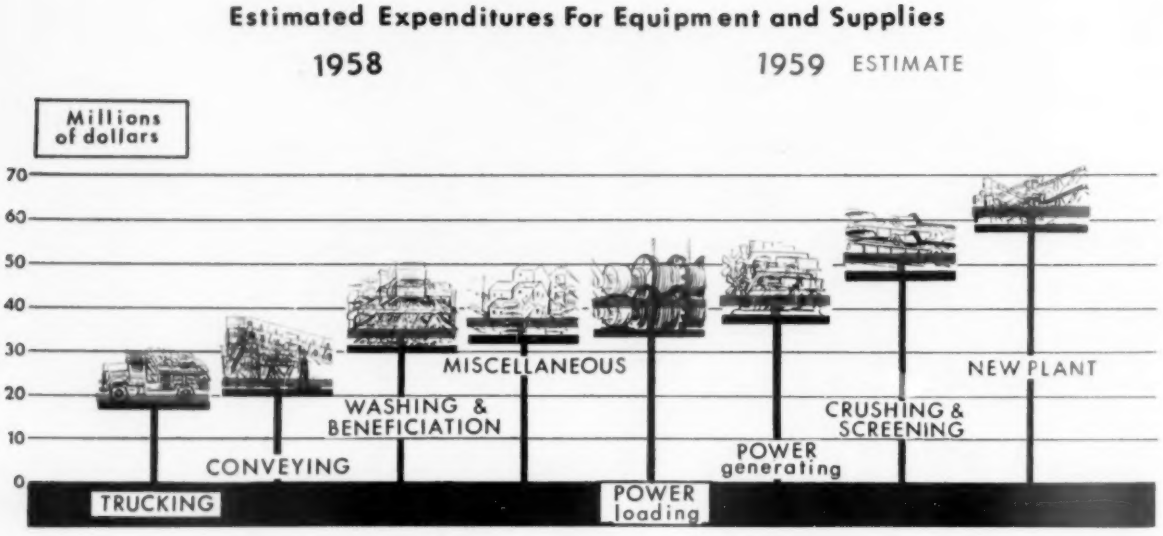
This boom in highway building will help to push the rock products industry through to a new high in total value, over $3 billion, in 1959. The pace of growth is one of the fastest of any American industry. Volume has more than doubled in just the past decade.

A substantial rise in most other segments of building will supplement the jump in highway building in 1959 foreseen by the board. State and municipal spending for heavy construction of the type stimulating to the rock products industries is expected to be particularly heavy in 1959. It is expected by the board to rise at least 14 percent, offsetting by a wide margin any possible deceleration which may take place in the aggregate federal expenditure. In the big field of waterworks, the board visualizes an 11 percent rise in 1959 over 1958 construction. Bridge activity is estimated up 15 percent, sewerage up 9 percent, military building up 8.3 percent, motel building up 8.7 percent, youth service building up 7.2 percent, club building up 6.4 percent, camp structures up 6.3 percent, restaurants up 5.9 percent, hospitals up 5.8 percent, colleges up 5.5 percent, resort building up 5.1 percent, schools up 4.6 percent, hotels up 4.5 percent and sanitariums up 3.9 percent.

Not all lines are expected to top 1958; industrial construction, down sharply from 1957 in 1958, is expected to decline again in 1959—an average of 7.9 percent from 1958. But that percentage drop will compare with an exceptional 35 percent drop in 1958. A tendency to over-expansion of new plants in 1955, '56 and '57 accounts for this precipitate decline, but the downtrend will be moderated considerably in 1959, and dollarwise it will be far more than outweighed by increases in other fields, with a consequent improvement of the picture in the aggregate.

Actually, the board's estimate of projected growth of national spending for all goods and services in 1959 indicates a sharp turn-around some time during the year in spending for industrial plants.

Gross national product will reach a $482 billion annual rate during 1959, according to the board's



Bright outlook for '59 *continued . . .*

estimate—a $56 billion or 15 percent gain from the recession low of $426 billion in the first quarter of 1958. The impetus of this rise in the nation's economic activity is expected to generate pressure for more industrial plants, to the extent that the second half of 1959 is likely to show a minimum seven percent increase over the second half of 1958. However, the first half of 1959 is not expected to show enough improvement, despite a comeback from the lows of recession spending for new industrial plants, to compare favorably with the first half of 1958.

While still at a low rate, spending for new industrial plants has turned the corner—much sooner, in fact, than many business analysts had thought possible. Pressure of fast-expanding population and high spending power, as well as the keen pressures of increasing competition and mounting labor costs, will force many of the reluctant potential expanders into building more modern plants.

A fairly tight money market will retard some, it is true, but it is largely out of profits and depreciation allowances that industry finances most of its construction. Profits are now rising rapidly, and profit margins have been improved by recession-influenced economies, which now are emphasizing the rate of the rebound. The board estimates that total corporation profits in 1959 will exceed $48 billion before taxes, compared with $36 billion in 1958. The 1959 total would be at a new high record, and for perspective, it would compare with $40 billion in 1950, $24.6 billion at the World War II height in 1943 and only $6.4 billion in 1939. The 1959 estimated total profits are five times the profits made in the hallowed, halcyon year of 1929!

The record-breaking spending potential of American industry for new building in 1959 may be gauged, additionally, by an analysis of financial condition of the broad cross section of American business. Current assets exceed $235 billion, including $50 billion in cash and equivalent, while current liabilities total $118 billion, leaving net working capital of $117 billion, a strong new, all-time high. That figure compares with $113 billion a year ago, $81.6 billion in 1950 and only $24.5 billion in 1939.

Strength in the corporate financial structure of the nation means ability to stimulate a major business uptrend in the economy, partly through more spending in new construction and modernization. Such expansion can help develop new, appealing products and improve the old. The good financial condition of business also indicates the wherewithal to advertise and sell these products adequately, with the traditional result of further upgrading of the rising American standard of living. A 10 percent rise in appropriations for promoting and advertising goods is forecast by the board for the next 12 months, and that is certain to stimulate consumption to the extent that more expansion and building will be needed in many instances, with corresponding benefits to the rock products industries.

A good outlook for home construction supplements the excellent prospect for construction of

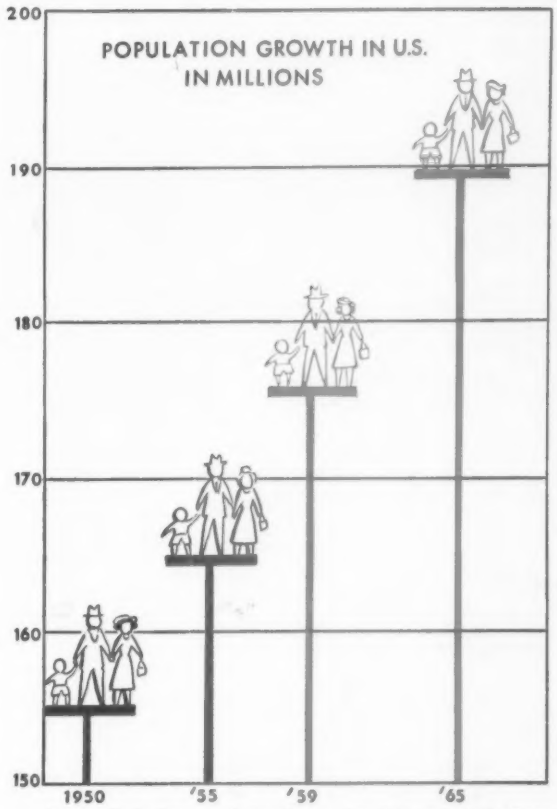
Growth of U. S. population now approximates 3 million a year . . . the equivalent of adding another Boston, Cleveland and St. Louis

larger buildings and for basic works such as highways, dams and bridges. Home building also will need more of the products of the nonmetallic mining enterprises. Although money conditions are likely to be rather tight in 1959, the financial position of the consumer—like that of the industrial structure of the country—is likely to be stronger; in fact buying power is likely to be at a peak.

Despite some unemployment lingering from the past recession, disposable personal income of the public is currently running at an unprecedented high annual rate of about $315 billion. That compares with an approximate $307 billion annual rate a year ago, and with only $206 billion in 1950. For further perspective on growth, it was but $70.4 billion in 1939! While it is true that some of the recent increase in disposable personal income is attributable to larger unemployment compensation, social security and pension payments, this, even so, is seen by the board as attesting to the effective working of the nation's built-in anti-recession factors. The fact remains, too, that disposable personal income is up and rising, and the board expects the public to use more of this income for purchase of housing. Farm income also is well ahead of last year, and so is rental income and personal interest income.

Employment is moving steadily upward and unemployment, downward, and the board visualizes a firm uptrend in employment in 1959, with obvious benefits to the rock products industries. Unemployment remains excessive—partly as a result of increasing automation to save on soaring labor costs—but as demonstrated in the recent recession, unemployment is not the devastating force to the economy that it once was, and spendable income of the unemployed is higher than it ever has been in American economic history. Some analysts dwell on the point that an important group marrying now represents people born during the big depression of the '30s, when the birth rate fell off sharply. They talk of declining family formations and therefore a smaller need for housing construction.

Yet the facts of the situation prove otherwise. The board emphasizes another set of figures which reveal that the marriage totals of this country for many years have outdistanced the totals of homebuilding starts, therefore creating an enormous backlog of new home needs from these now unsatisfactorily housed people. The biggest shortage of homes piled up during World War II, but in no year since then has home building caught up with



Source: U. S. Bureau of the Census for 1950 and 1955; ROCK PRODUCTS *estimates for 1959 and 1965*

marriages, and the deficit for the period since then has accumulated to over 14 million homes.

It is true that some of these marriages have disintegrated into divorce and have been broken up by death or otherwise, but even taking a very conservative half of the accumulated difference, there would be about 7 million couples not provided for by adequate housing. While marriages hold up at a high rate (as young people marry at earlier ages), the present 1.2 million per-year homebuilding rate continues to emphasize the disparity between home building and marriages. It indicates, too, that there must be a considerable increase in such construction if needs are to be met. Pressure for more homes is strong now, and that will bring keener pressures for more products of the nonmetallic mining industries. Future requirements of homes for the next few years are at least 1.4 million a year, and, given continued general business prosperity, the public will be

Please turn to page 140

Alpha builds new cement plant with



Big new equipment means high output per dollar

Economic study, quarry analysis are two keys to low cost

by Elwood Meschter

A HIGHLY EFFICIENT NEW CEMENT PLANT at a cost of less than $8 per barrel of annual capacity—that's the achievement of Alpha Portland Cement Company at its $17½-million wet-process plant at Lime Kiln, Md. As a result, Alpha is in a commanding position in the fight for one of the nation's prime markets for cement, the Baltimore-Washington area.

This achievement was made possible by careful planning and close cooperation between the company, design engineers and suppliers. So successful were they that the 2¼ million bbl. operation will be manned by only 140 men. The new plant was the last stage of an ambitious expansion program which has seen this producer invest more than $28 million in the past year to add nearly 3 million bbl. to its capacity and greatly improve its production and marketing effectiveness.

The site for Alpha's ninth plant was selected after an exhaustive economic study of the transportation problem. It is within 40 miles of both Baltimore and Washington, close enough to make 24-hr. shipment of cement almost anywhere in the area. Excellent rail service will make it possible to bring in bituminous coal from nearby mines, as well as iron ore, gypsum and high-calcium limestone.

About 1,000 acres of limestone land were obtained, enough to keep the plant running at full blast for the next century. Since the property is in a rich agricultural area, the plant was designed from the very beginning to be an asset to the community. Highly efficient dust control equipment was specified, as well as sewage treatment and landscaping. From the outset, the community was kept informed of the plant's progress through releases to newspapers and through other public relations activities.

Planning for efficient plant operation started with a $50,000 core drilling program covering the entire property. Core analysis enabled Alpha's engineers and chemists to chart the most economical cement mixes for years in advance and to plan for the most effective development of the quarry. Two faces have now been opened; material from each is blended to make the mix for the kilns. As the plant goes into routine operation, the ratio of stone from each face will be adjusted to suit kiln operating conditions and the types of cement to be made.

Even the closely spaced core holes failed to reveal the substantial deposit of sand that has since been found on the property. This windfall will be used in place of other silica which would have been brought in by rail. In the first few months of operation, the quality of the limestone has been somewhat better than indicated by the original analyses; this will materially reduce the amount of high-calcium limestone "sweetener" to be brought in from the nearby Shenandoah Valley.

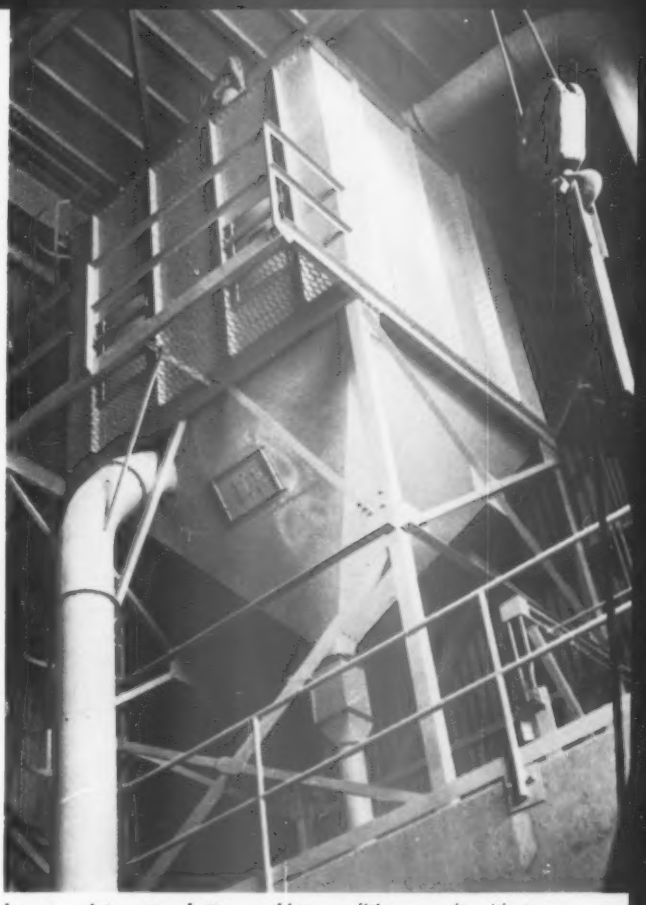
The core drilling program paid for itself in reduced construction costs. Design engineers were able to spot heavy structures on solid rock and to

low investment

save the cost of heavy foundations. Pits and excavations were located in voids and fissures in the rock formation, materially reducing the amount of excavation. The single disadvantage encountered was the difficulty of finding a place to put a reservoir in the heavily fissured rock. This problem was solved by grouting.

Coordination between the contractor and suppliers brought men, machines, cement-making equipment and building steel to the site according to an exact schedule. Each piece of equipment was installed, checked, run in and put on the production line according to a plan which programmed the whole operation. First stone was quarried in May; the first shipment of cement was made July 7, 1958. The mill building was started first and was finished just after the raw material conveying system put the first cement rock into storage.

This is a remarkable achievement, considering that the plant is run with personnel recruited from local people. The crews were trained by Alpha's supervisors brought in from the company's other plants. These newly trained people have operated the plant since the second week in September under the direction of George V. Cosgrove, plant superintendent.



Lower maintenance, better working conditions result with top dust collecting setup. Truck-dump hopper, crushers, screens and conveyor transfer points are all equipped with dust hoods

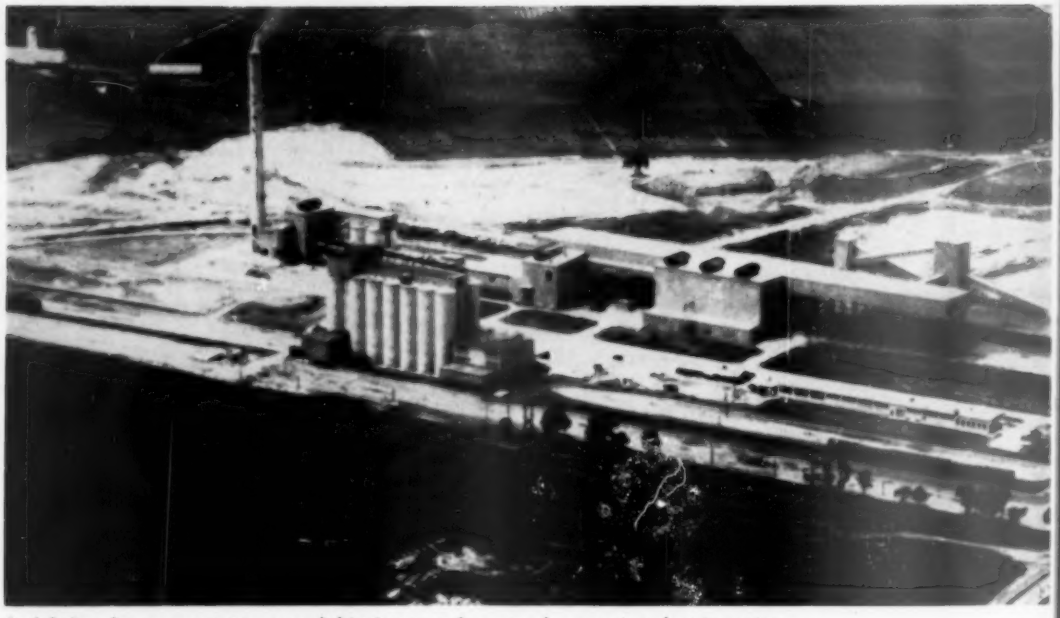
Production efficiency starts in the quarry where each face is worked with a 2½ cu. yd. electric shovel. A fleet of eight 18-ton end-dump trucks hauls rock to the primary crusher hopper now about ¼-mile away. Limestone blending is accomplished at this hopper by dumping three loads of the high-calcium, high-magnesium rock from quarry No. 2 for every load of rock from quarry No. 1. The Frederick Limestone contains enough alumina so that no clay or shale is needed in the mix, and the clay overburden is stripped and used as fill.

A 5 x 12-ft. vibrating feeder under the hopper delivers to a 5 x 7-ft. vibrating grizzly. Only the plus 4-in. oversize from the grizzly goes to the 48 x 60-in. jaw crusher. Through-screen material drops through to the tail of an inclined belt conveyor, where it forms a bed of fines to cushion the fall of material dropping from the crusher. Rated capacity of the crushing and screening system is about 450 tph., but it is normally operated at about 350 tph.

A 48-in. belt conveyor takes the limestone from the primary crusher directly to a secondary crusher in the screening tower. This crusher is a 17 x 45-in. impactor selected for its ability to make a maximum amount of minus 50-mesh fines from the minus 4-in. feed stone. Crushed stone is taken on a belt conveyor system up to a pair of vibrating screens high in the tower above the impactor. The flow of material is split between the two screens with plus ¾-in. rock dropped down to the impactor to be recycled through the system. The through-screen cement rock is sent to storage.

Two features add to the efficiency of the screening and crushing system—dust collection and electric heaters. The truck-dump hopper, the crushers, the screens and the conveyor transfer points are fitted with hoods that draw dust off to bag-type collectors. This reduces maintenance and improves working conditions in the area. The electric heaters draw about 90 kv. during the winter, but they are proving invaluable to prevent the build-up of wet material in the chutes, hoppers and dust collecting system. The heaters can be turned on at any time they are needed to prevent condensation and keep the limestone flowing.

Center of the plant is the mill building, placed midway along the 80 x 680-ft. storage building. It houses both raw grind and finish mills and the



Aerial view shows cement storage and shipping area, foreground, processing plant in center

New Alpha plant *continued . . .*

concrete bins which store materials ahead of the mills. Just north of the mill building is the storage area for cement rock, which is reclaimed for milling by a 4-cu. yd. overhead crane. Just to the south is a storage area for about 100,000 bbl. of clinker, brought to mill storage by another 4-cu. yd. overhead crane.

Rail cars bring coal for the kilns to an unloading area by the mill building. An elevator and screw conveyor system takes the fuel to the burner building. Iron ore, gypsum, sand and high-calcium limestone are also conveyed to storage from rail cars.

There are two 9 x 37-ft., three-compartment ball mills for the raw materials and three 9 x 35-ft. mills for cement. Each mill is fed by an oscillating conveyor that takes the cement-making ingredients from feeders under the storage bins. Sand and iron ore are metered to each raw mill with weighing belt feeders and limestone is drawn out with reciprocating plate feeders. A similar system supplies the finish mills with clinker and gypsum.

Plant Chemist Theodore M. Houseknecht sets the ratio of each ingredient for both raw grind mills and for the finish mills, controlling the flow of raw material from the laboratory until it reaches the kilns in the form of a slurry.

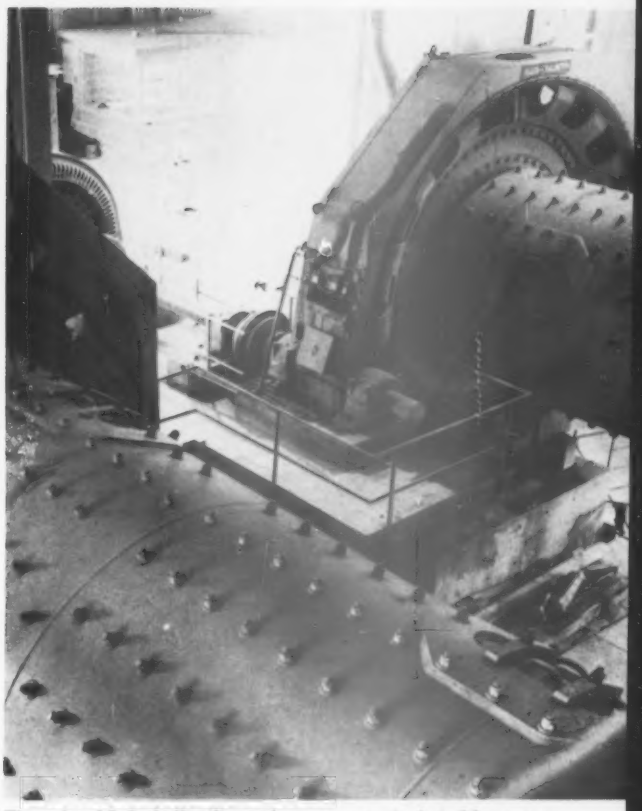
The slurry is made by adding about 35 percent water to the raw mills. The ground material is discharged from each mill to a small vibrating screen to remove the plus 40-mesh spitzers. These are pumped directly back to the feed end of the raw mill.

The finish mills yield a finished cement about 90 percent through 200 mesh. Mill output is elevated to an air separator, and the oversize is returned to the mill. Finished cement is pumped to storage silos. The feed of clinker and gypsum is determined and controlled from the laboratory.

Slurry from the raw grind mills is pumped to one of eight storage tanks at the feed end of the kilns and is distributed to the tank through one of the three distributing launders. Each tank is fitted with agitators to keep the solids in suspension until the slurry is ready to be pumped to a kiln feed tank. The contents of each tank are checked by the laboratory; if any balancing or blending is needed, slurry can be recirculated between the tanks.

Each kiln is 11¼ x 400-ft. and is driven by a dual 75 hp. drive. Normal kiln speed is about 60 rph., but the direct current motors can be varied within a range of 30 to 90 rph. In contrast to many new cement plants, the kilns at Alpha's new plant are only a few feet above grade. The drive machinery and each set of trunnion rollers is mounted on a heavy concrete base, but each is served by a platform reached by a short flight of stairs. The pipes and conduit serving the feed end of the kiln are just as accessible as the kiln machinery for inspection and service. This piping parallels the kilns and is all above ground—very practical for the relatively mild winter weather in the Maryland countryside.





Three 9 x 35-ft. ball mills produce cement which is 90 percent minus 200 mesh



Low mounting makes kilns, service piping readily accessible. Storage shed will be extended to foreground as plant is enlarged

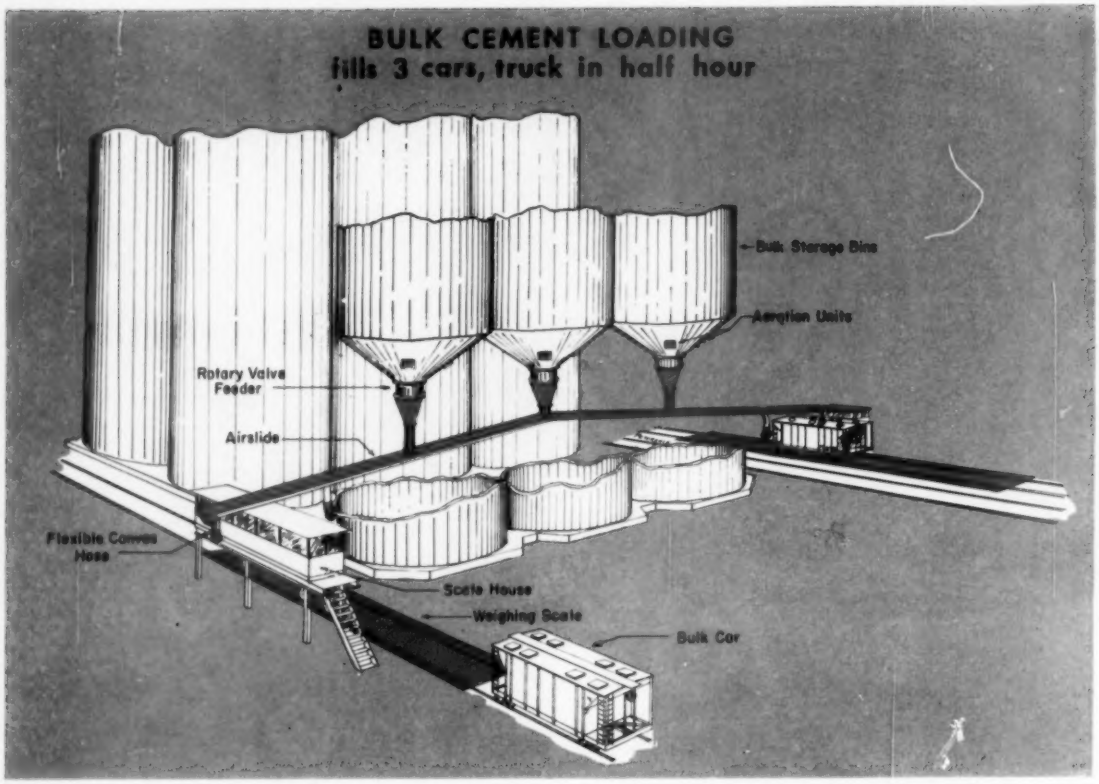
A ferris wheel feeder for each kiln receives its supply of slurry from one of four kiln feed tanks. The variable-speed motor on each feeder is controlled by the speed of the kiln it feeds. Every small variation in kiln speed is signalled to the motor, which then changes the feed rate. Additional flexibility was designed into the feed system in the form of mechanical variable-speed reducers. This permits the burner to change the feeder speed by remote control.

Kiln efficiency is increased by the dust collection and recycle system. Exhaust gases from each kiln are passed through a mechanical dust collector and through an electrostatic dust collector. More than 99 percent of the solids in the 90,000-cfm. exhaust gas from each kiln is removed in the system.

Dust from the mechanical collector is carefully segregated from the much finer materials dropped from the electrostatic collectors. A screw conveyor under each collector delivers each kind of dust to a bucket elevator which sends it to dust bins in a screw conveyor. Either kind of dust can be fed to the kiln feed pipe by tubular feed screws which tap the bottom of the screw conveyor across the top of the kiln feed building.

The amount of each kind of dust fed to each kiln can be varied by changing the speed of the feed screws through the remote control of the ratio of a mechanical variable speed reducer on the drive. The motors on each drive are variable speed units controlled from the kiln speed the same way the slurry feeder is controlled.

All dust not returned to the kilns continues on to the top of the dust storage bins. Any unwanted accumulation of either kind of dust can be drawn



New Alpha plant *continued . . .*

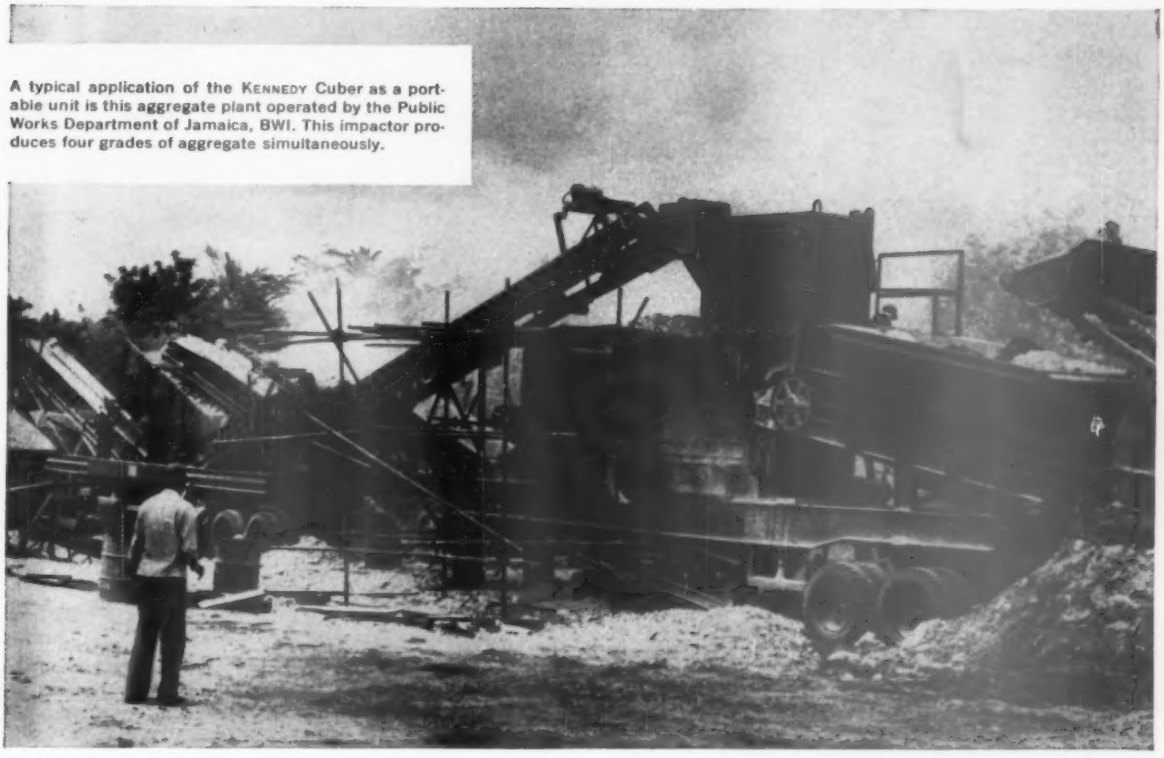
off into trucks to be hauled to disposal areas. However, a conveyor under each bin can draw off dust to be recycled in the dust handling system to provide a continuous supply of dust for the kilns.

Hot clinker discharged from each kiln drops to a horizontal grate cooler which yields a clinker cool enough to be handled without gloves. The huge suction fan at the stack maintains a negative pressure through the kiln and at the discharge point of the cooler, where the clinker drops to an oscillating conveyor. This helps to control dust losses around the kiln. The 30-in. oscillating conveyor gathers clinker from both kilns and discharges it above the floor of the covered clinker storage area. The overhead crane distributes clinker to storage, ready to be reclaimed for milling to cement. The storage area holds about 100,000 bbl. of clinker but can be readily lengthened to provide additional storage capacity if needed. Tentative plans have been made to add a third kiln and additional mills to the plant when needed. At that time the storage areas will be extended

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MAJOR EQUIPMENT AT LIME KILN, MD., PLANT

In quarry:	
Shovels, 2½ cu. yd. (3)	Marion Power Shovel Co. (2); Harnischfeger Corp. (1)
Pan scraper, 21 cu. yd.	Euclid Div., GMC
Trucks, 15-ton end dump (8)	Euclid Div., GMC
Bulldozers (3)	Allis-Chalmers Mfg. Co.
Drills (4)	Gardner-Denver Co.
In cement plant:	
Jaw crusher	Traylor Engineering & Mfg. Co.
Vibrating feeder	Syntron Co.
Vibrating grizzly	Syntron Co.
Vibrating screens, 4 x 14 (2)	W. S. Tyler Co.
Crusher, 17 x 45 impactor	Pennsylvania Crusher Div. Bath Iron Works
Belt idlers	Hewitt-Robins
Motors	Allis-Chalmers Mfg. Co.
Ball mills	Allis-Chalmers Mfg. Co.
9 x 35 ft. (3)	Allis-Chalmers Mfg. Co.
9 x 37 ft. (2)	Allis-Chalmers Mfg. Co.
Kilns, 11¼ x 400 ft. (2)	Allis-Chalmers Mfg. Co.
Reciprocating plate feeders	Link-Belt Co.
Oscillating conveyors	Carrier Conveyor Corp.
Weighing feeders	Hardinge Co., Inc.
Clinker coolers (2)	Fuller Co.
Pneumatic conveying systems	Fuller Co.
Coal mills (2)	Combustion Engineering, Inc. Raymond Div.
Overhead cranes, 4 cu. yd. (2)	Harnischfeger Corp.
Screw conveyor system	Continental Gin Co.
Dust collectors, mechanical	The Northern Blower Co.
Dust collectors, mechanical (2)	Research-Cottrell, Inc.
Dust collectors, electrostatic (2)	Research-Cottrell, Inc.
Slurry tank mechanisms (8)	Dorr-Oliver, Inc.
Plant design and construction	Macdonald Engineering Co.



A typical application of the KENNEDY Cuber as a portable unit is this aggregate plant operated by the Public Works Department of Jamaica, BWI. This impactor produces four grades of aggregate simultaneously.

THE **KENNEDY CUBER SENIOR**

PORTABLE OR STATIONARY

With a mobile Cuber your plant can be set up at the most favorable location between the source of raw material and the point of end use. The ease with which this plant can be moved and set up as location requirements change is a result of the portability of the KENNEDY Cuber.

Other features of the KENNEDY CUBER are...

• **ROTORS**—Welded laminated steel plate rotors turn on heat treated alloy steel shafts, pressed and locked into the rotor cores. Three cast manganese steel hammers are rigidly attached to each rotor by an exclusive method which permits quick, easy adjustment for wear.

• **BEARINGS**—Heavy duty, self-aligning, spherical roller bearings are rigidly attached to withstand the severe punishment of the breaking action with minimum friction and maintenance.

• **BASE**—The sturdy, one piece base is made of arc-welded, heavy steel plate. Portable units are supported by 16 heavy duty tires.

• **HOUSING**—Steel plate housings are protected against wear by cast manganese steel liners and the exclusive KENNEDY rotor end disc. Conveniently located doors provide ready access.

• **REDUCTION CHAMBER**—Maximum impact and minimum attrition are built into the KENNEDY reduction chamber. Coupled with the advanced KENNEDY rotor, this design is responsible for the high degree of cubing for which this KENNEDY Impact Mill is famous.

• **BAFFLES**—The adjustable, wear-resistant steel baffle deflects over-size rock back to the hammer circle for further reduction. Adjustment of this baffle provides regulation of flow and accommodation for differing characteristics of various rock types.

Send for descriptive literature on the KENNEDY *Cuber Senior and Junior. Consult* KENNEDY *for the most effective approach to your impacting and crushing problems.*

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Enter 1501 on Reader Card



Paul Worseck, Lehigh Portland Cement Co., is new general chairman of the Cement, Quarry and Mineral Aggregates Section of the National Safety Council. He is manager of safety and welfare at Lehigh Portland and editor of the company magazine, "Lehigh News Conveyor." Mr. Worseck has been active in safety activities in the Portland Cement Association and the Lehigh Valley Safety Council.

Spot photos help cut accidents

Safety Council shows they're "doing something" about safety, not just talking

YOU'VE OFTEN HEARD THE QUESTION: "Why doesn't somebody do something about the accident toll?" Well—somebody is.

The Cement, Quarry and Mineral Aggregates Section of the National Safety Council is going after the problem of industrial accidents with vigor. Some are even getting the kids at home in on the act. Others are taking photos of men and equipment on the job. Quick developing and printing allow the pictures to be shown at a meeting in the plant the same day, with resulting horror on the part of safety-rule violators.

The system of visual aids is being used to the hilt in all types of safety programs, to help get the story over. And it is most effective. In fact, safety men used the method widely at the NSC Section meeting in Chicago, October 21 and 22, to pinpoint safety problems.

Much work is going forward on shaping the thinking and attitudes of employes, it was brought out at the meeting, to make them realize how to take care of themselves at work. Reason for this approach is that 85 percent of accidents are caused by unsafe practices. The rest are due to unsafe conditions, but these are being reduced gradually.

The active group of devoted safety men elected Paul Worseck, Lehigh Portland Cement Co., as general chairman of the CQ&MA Section for the 1958-1959 term. He follows Seymour B. Fleming, New York Trap Rock Corp., who contributed to the excellent work done by the Section this past year. Mr. Fleming was recognized for his untiring efforts in behalf of safety work for the Section by being awarded a National Safety Council plaque. William A. Kipp, Universal Atlas Cement Co., and Fred E. Storch, The Whitehall Cement Mfg. Co., were elected vice chairmen.

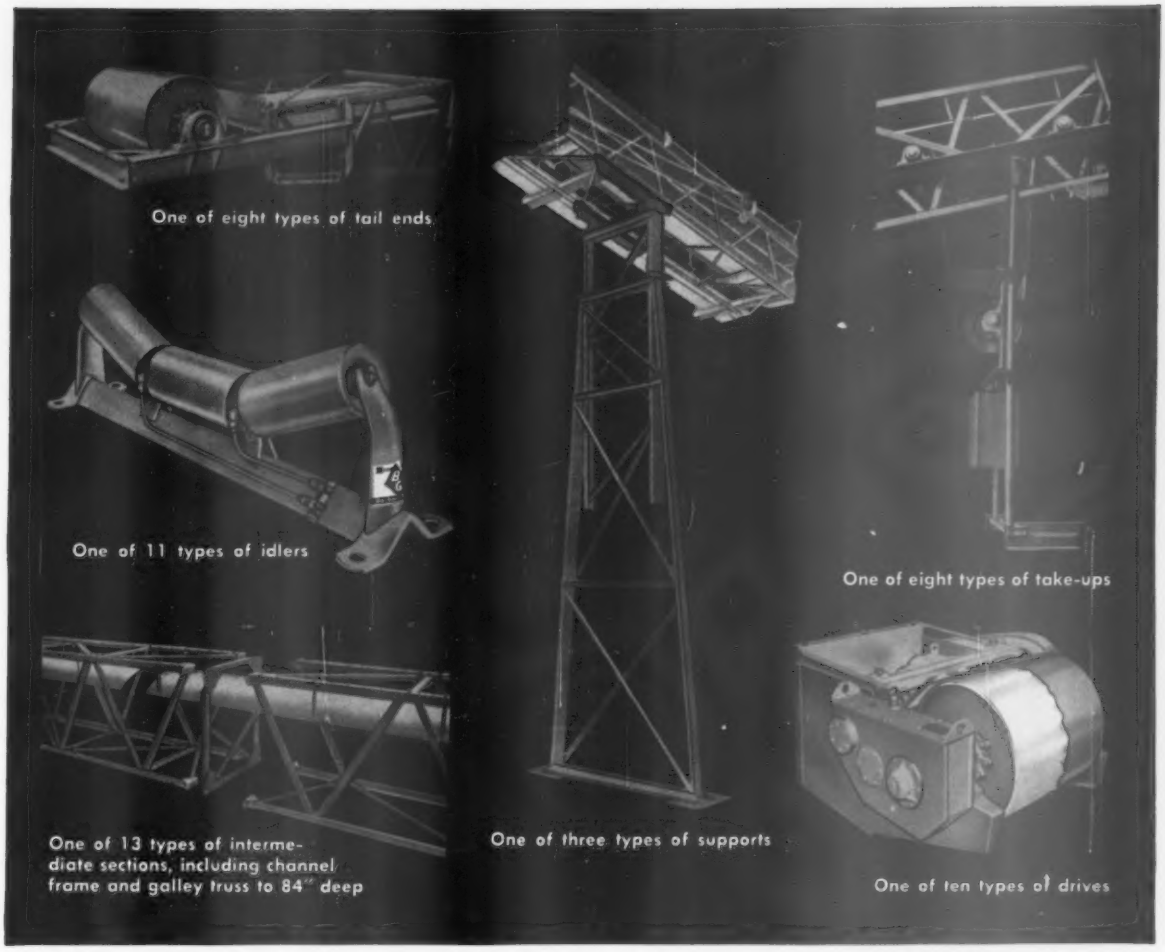
Safety consciousness is a perishable commodity, according to Joseph A. Fernandez, personnel and safety supervisor for National Gypsum Co. After extensive surveys, he reported, his company decided to do something about it by developing an off-the-job safety program. It isn't necessarily true that one can expect an employe to practice "part-time safety"—work safely on the job and forget all about it at home. A well-planned and coordinated off-the-job program has reaped these benefits for National Gypsum Co.: (1) children at home become interested and help the working parent to build his safety consciousness; (2) frequency and severity rates have dropped both on the job and at home. Mr. Fernandez says that "a home safety program has been the most significant factor in influencing reduction of in-plant safety rates" at National Gypsum.

"How to Save $1/4 Million of Loss" was the preferred title of a talk by A. B. Hoftiezer, safety director of Laverack & Haines, Inc., rather than "Trouble Spots and Answers," which was assigned him. It is his effective method that points out quickly and realistically the dangers employes make for themselves daily by not practicing safety. He used the camera to shoot unsafe actions of employes on the job, then showed the pictures to them the same day. Many pictures he had taken served as the background for his talk—and he estimated that compensation for the incidents he covered photographically came to $250,000.

A similar method was used by Paul Worseck in another session to show effective ways to protect workmen from danger spots around working equipment. These photos pointed out many ways to barricade workmen out of potential danger points.

Do you know what to do in the first few minutes after an accident? This basic information should be made available to everyone, since a life may be saved or lost in those first few minutes. Paul M. Hedley, vice president, production, North Ameri-

Please turn to page 145



Pictured here are just a few of the many Barber-Greene standardized conveyor components. Each is available in a wide variety of types and sizes, with unmatched flexibility for countless ways of assembly. Write for new bulletin.

Boost conveyor efficiency and cut costs with Barber-Greene standardized components

Every year, more and more belt conveyor installations — long and short, simple and complex — are made up of Barber-Greene standardized, "packaged" components. This standardization means fast, off-the-shelf delivery . . . almost limitless combinations of assembly that cut time and costs on any bulk material handling job . . . components completely interchangeable . . . spare parts readily available . . . simple selection and pricing right from the catalog. Light or heavy, Barber-Greene has the complete conveyor installation you need.

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- **You save special engineering time and expense.**
- **You save delivery time.**
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- **You save on alignment.**
- **You save on replacement costs.**
- **You save down time.**

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Here's a plant that doesn't wash gravel

Janesville Sand & Gravel is fortunate to have a deposit already washed—by glacier

FIFTY YEARS AGO, it took a man with a wheelbarrow all day to load one gondola car at Janesville Sand & Gravel Co. Today this Wisconsin producer has a brand new plant where 3 production workers can load 50 cars a day.

The new crushing and screening plant, designated No. 6, has a 400-tph. capacity. It is the latest step in an expansion program that began when the first crude loading machine replaced the man with the wheelbarrow.

A lot of the credit for the company's growth goes to the glaciers that once covered most of Wisconsin. The last one stopped at a low ridge just north of Janesville. When this huge mass of ice melted, its outwash waters carried deleterious matter southward and dropped pure sand and gravel in the 500 acres now owned by the firm.

This rich deposit is about 450 ft. deep, but it is worked to only 9 in. above the water table (about 100 ft. below ground level). Because the sand and gravel here are free of clay and organic matter, the deposits are unusually clean. The only hitch is that the powerful hydraulic forces of the glacial outwash carried away many of the very finest sand fractions as well as unwanted materials. As a result, fine sand must often be manufactured.

Plant No. 6 was built to tap a newly opened corner of the property where the gravel is much coarser than in the existing faces. A 100-ft. face is worked, with the top 45 ft. yielding the larger sizes of gravel. On the average, the plant's output is 30 percent gravel, 70 percent sand.

There is no washing problem—the glacier took care of that. Simple screening and crushing produce specification aggregates without the use of water. This means that fine sands that are usually lost in washing equipment can be retained and that the capacity and efficiency of screens, crusher and conveyors are increased.

Quality production starts in the pit with careful stripping of a 7-ft. layer of overburden. A 1¾-cu. yd. clamshell fills a field hopper with material from the bottom of the face. The portable hopper is fitted with an apron feeder to put raw aggregates on the first of a group of 3 sectional field belt conveyors for the 300-ft. uphill trip from pit to crushing and screening plant.

The 24-in.-wide movable belt conveyors give the whole digging operation exceptional flexibility. The clamshell rig and the field hopper can be spotted at any convenient location on the belt conveyors. And as the face moves farther from the processing plant, more movable conveyors can be added. The electric motor on each conveyor is mounted on a permanent bracket, and each conveyor has wiring and connections to plug in the motors of additional units in the system.

Permanent plant. A 175-ft.-long belt conveyor on permanent foundations takes material from the movable system and transports it to the top of the permanent plant. There, a 5 x 14-ft. double-deck vibrating screen scalps off plus 1½-in. material to be broken in a gyratory crusher. All crushed gravel is dropped to an inclined belt conveyor that can discharge to the main belt, returning the material to the top of the plant.

The recycle system is a miniature gravel preparation plant in itself. At the discharge point of the conveyor from the crusher are a small vibrating screen and a truck loading bin. All crushed gravel can be recycled continuously or collected for truck shipment. Or a crushed fraction of it can be screened out for shipment, with only oversize returned for recrushing.

The lower deck of the main screen takes out a plus ¾-in. or plus 1-in. product and a belt conveyor sends it to a stockpile.

Through-screen aggregates drop to a short inclined belt conveyor that takes them to a pair of 5 x 14-in. double-deck vibrating screens. The flow is split between these two screens. Either one can handle the normal quantity of material, but the extra screen assures ample capacity to take care of surges. Under normal loading, the two screens provide exceptional sizing efficiency for the sands.

All ¾ x ⅜-in. gravel from the top decks of the screens is taken to storage on an inclined fixed stacker belt conveyor. The ⅜ x ¼-in. sizes from the lower decks are delivered to an inclined radial stacker belt which distributes them in a wide arc in the storage area. A movable stacker was necessary, since there is a large quantity of these sizes in the finished materials.

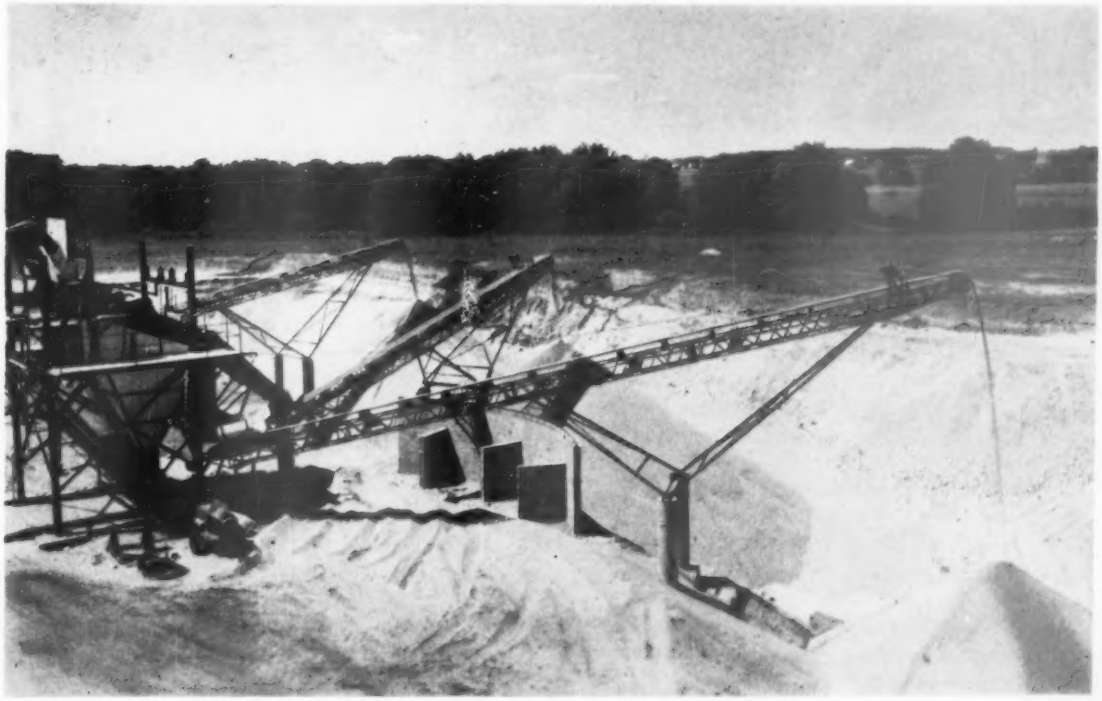
All through-screen sands are picked up on a short inclined belt conveyor and taken to the foot of a fixed stacker belt conveyor. The controls of

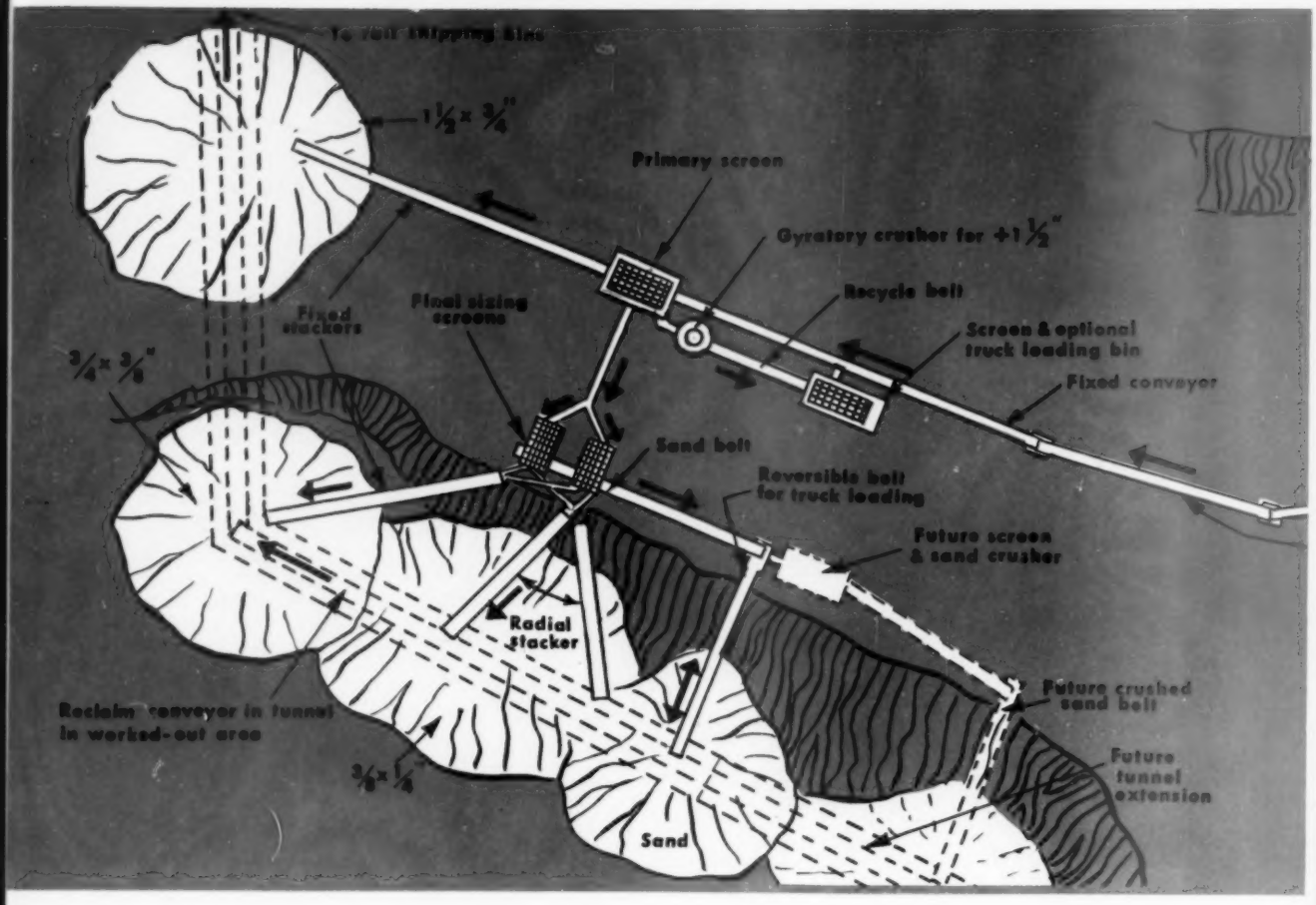
Please turn to page 102



Field hopper and belt conveyors, and deep deposit of clean sand and gravel are features of the new plant

Final screens give three sizes, which are stored over tunnel (visible lower right)





Janesville *continued from page 100*

this conveyor's motor are reversible. Whenever a truckload of sand is needed quickly, the belt is reversed and the conveyor discharges over the tail pulley. The tail-end of the conveyor is high enough to discharge into a truck. This ingenious arrangement loads sand for shipment while the reclaim conveyor under the stockpiles is loading out other sizes.

The concrete block reclaim tunnel runs eastward under the four storage piles, with two or three reclaim gates under each pile. A belt conveyor system carries aggregates to a rail shipping station at Plant No. 5.

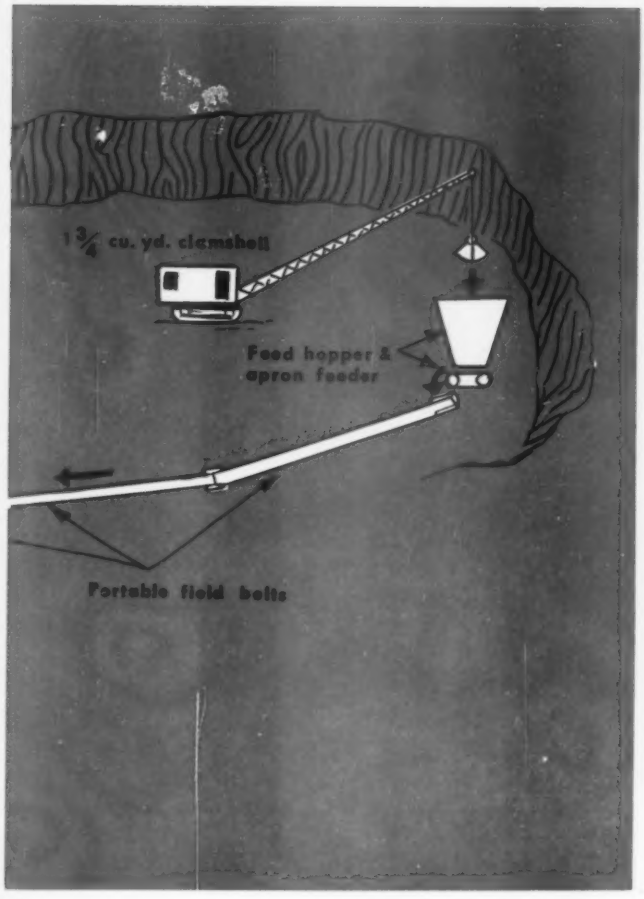
The conveyors in the reclaim tunnel are equipped with idlers suspended from wire rope supports. This design eliminates structural steel framework that would require painting and maintenance in the damp tunnel.

The combined know-how and experience of George Meyer, vice president and production manager, and Roy Jensen, construction superintendent, went into the new plant, but its efficiency is constantly being improved.

First to benefit was the electrical system. A full-time electrician was engaged to design and install wiring, controls and motors. Each motor is complete with sequence controls and safety cut-out switch. The specification of a single manufacturer's motors and controls has sharply reduced the number of spare electrical parts necessary to keep the plant humming continuously.

An addition to the sand processing system has been proposed to make crushed sands from the excess of No. 4 and No. 8 sizes. A screen will be mounted at the point where the existing sand belt now discharges to the stacker belt. This screen will scalp off coarse sands and drop them to a crusher that will break the particles and recycle them to the screen.

Laboratory tests and screen analyses are still being run to determine the most effective crusher to produce the necessary fines. When the new equipment is installed, a second stacker belt will take the two sands to storage.





Top conveyor brings pit run to plant. Lower belt recycles crushed oversize, which also can be loaded directly to trucks. Belt at left leads to other screens where final sizing is done

Another innovation proposed for the more distant future is the extension of the reclaim tunnel westward towards another railroad. The belt conveyors in the tunnel would be arranged to operate in either direction. They would discharge to another set of rail-car loading silos still to be built. In this way, shipments of aggregates over the second railroad could be begun without the heavy costs of switching cars.

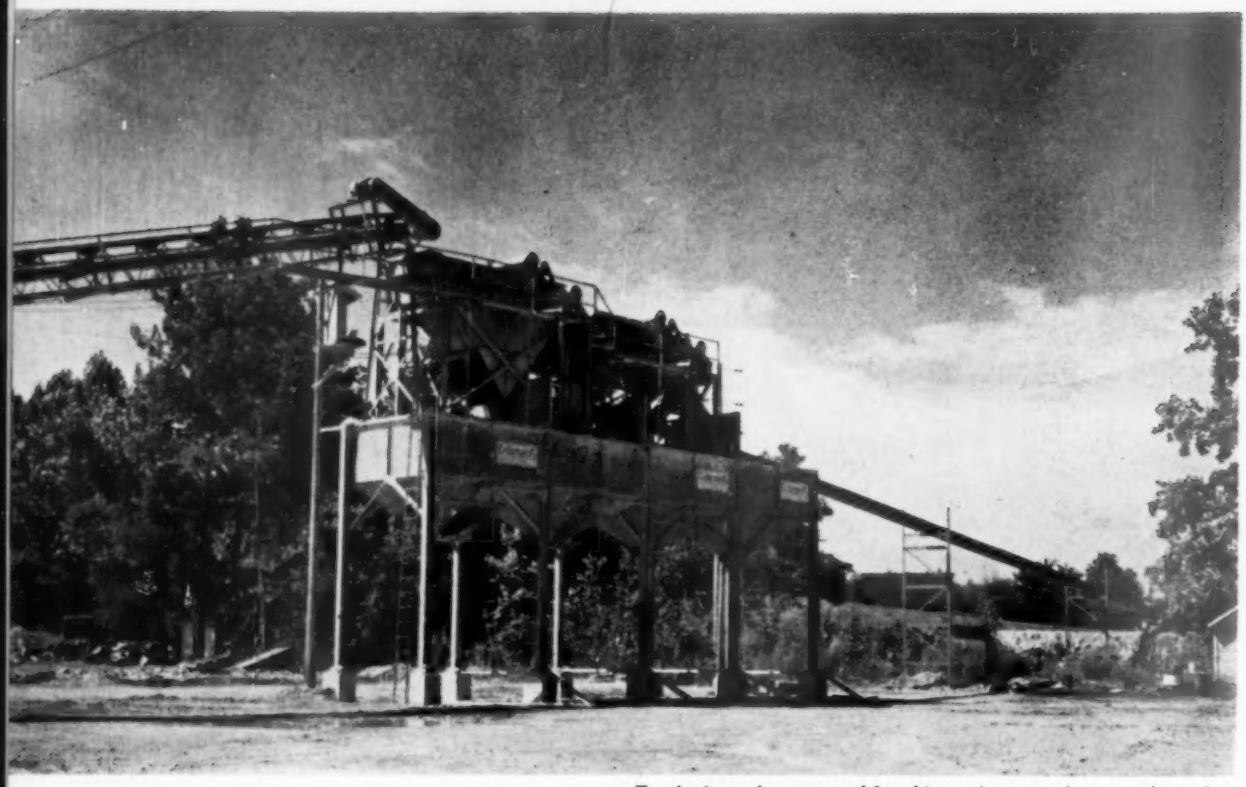
This constant quest for improvement has always been an outstanding characteristic of Janesville Sand & Gravel Co. The company was founded in 1907 as the Janesville Cement Shingle Co. by J. K. and J. R. Jensen. This prototype firm got aggregates for concrete block and shingle from a "little piece of land" that the Jensen brothers had bought on the south side of Janesville. According to J. R. Jensen, the business really got its start when he sold some sand and gravel to a railroad which stipulated that the material had to be loaded on cars.

Since Mr. Jensen had no equipment for the job,

Please turn to page 150



Reversible sand stacker belt has low end high enough so trucks can be loaded directly



Two horizontal screens and four bins make up roadstone washing plant

Washing plant does it

By-product makes profitable stone

WHEN WASHED CRUSHED STONE became necessary to meet tightening specifications of state and county highway engineers, Felix Dunn promptly put in one of the first crushed stone washing plants in the Midwest. The new washing plant made it possible for him to convert the hard, dense stone in the upper part of his quarry from a by-product of the Dunn Limestone Company's fluxstone operation to a profitable product in its own right—specification aggregate.

Pioneering is nothing new to this 80-year old veteran rock products producer. And at a time when other men would be thinking about tapering off, Mr. Dunn is developing a plan to expand his quarry operations. After 52 years in business, he is still thinking of ingenious ways of making his plant at Spencer, Indiana, more efficient.

During the 1958 season this plant processed about 1,500 tons a day of washed roadstone. But even this production will not be enough to supply the needs of Indiana's expanding network of improved roads. Right now, Mr. Dunn is planning to put in equipment that will double the capacity of the washing plant by the time the 1959 season starts. This new equipment will make enough additional sizes of washed stone to keep production in line with orders.

Expanded output calls for more quarry production. So with characteristic energy, Mr. Dunn has started a 2-yr. project of stripping the overburden from 10 acres of his reserves. When this job is done, he can concentrate on doubling the capacity of his fluxstone plant from 300,000 to about 600,000 tons a year, completely rebuilding it at the same time.

The new washing plant vastly improves the effectiveness of the old crushing and screening plant, which was designed to produce heavy sizes of fluxstone for steel mills. Fines from the reduction of the 99 to 99½ percent high-calcium stone were sold as agricultural limestone, but operation of the plant depended largely upon the fluctuating

Please turn to page 109

This great performance story began more than two years ago— and it's getting better all the time!

More than 50 Allis-Chalmers HD-21's are handling Toquepala's toughest jobs for Utah Construction Co. and Morrison-Knudsen Co., Inc.



Working up to 14,000 feet high in the Peruvian Andes, to develop a large mining project for the Southern Peru Copper Corporation, these tractors have been constructing roads . . . building railroads . . . preparing sites for entire new towns.

They've faced some of the toughest conditions in the world . . . rock, sand, dust, cold and high altitude all rolled into one. After two years of round-the-clock operation, these machines have piled up an outstanding performance and on-the-job record.

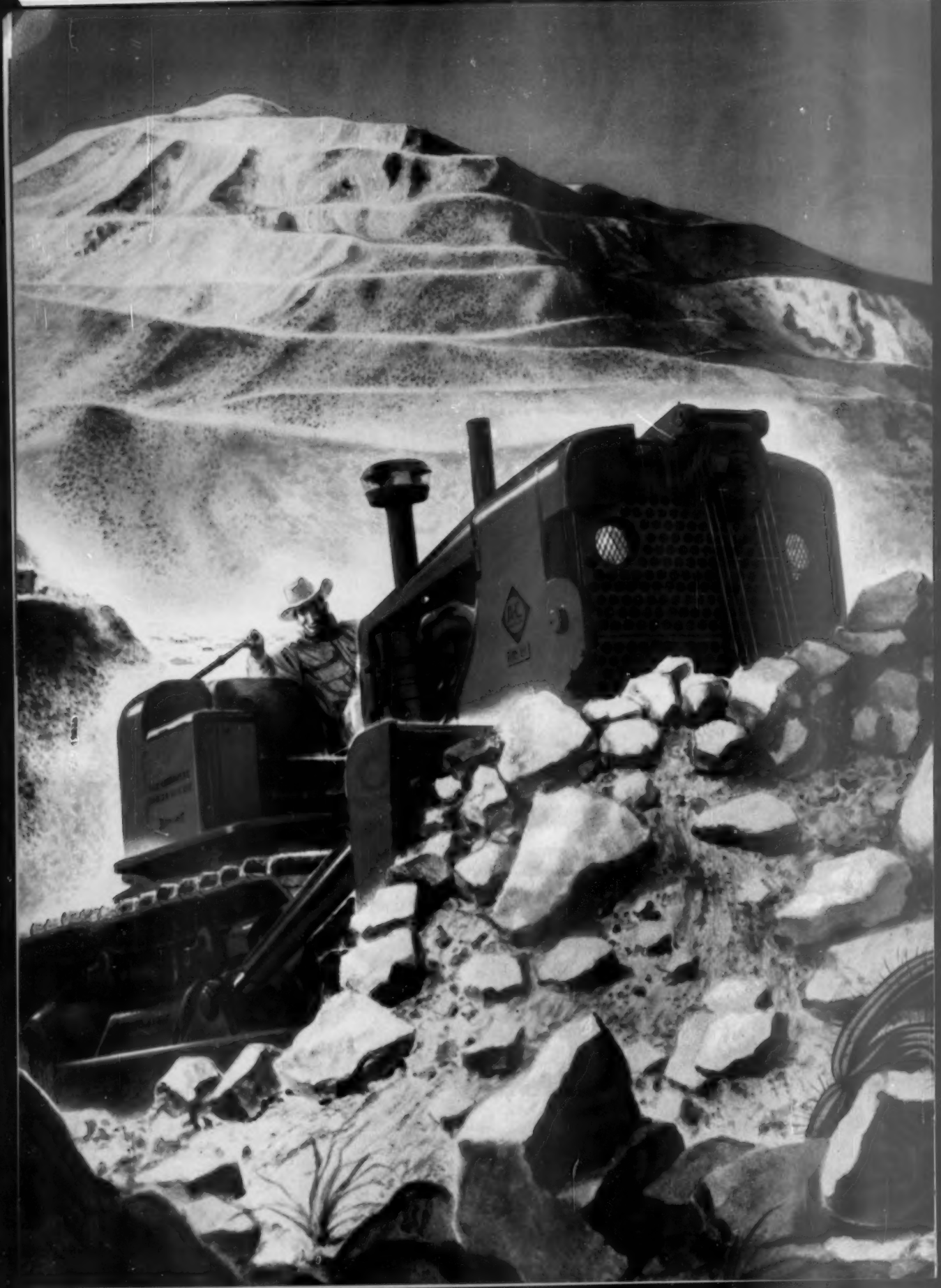
The Toquepala story is another good reason why you should have all the facts on the new HD-21. Across America, as in the Andes, leading construction men are discovering that the HD-21 is the long-life, big-production crawler tractor they've been looking for. See your Allis-Chalmers construction machinery dealer. Allis-Chalmers, Construction Machinery Division, Milwaukee 1, Wisconsin.

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...power for a growing world

CRAWLER TRACTORS • MOTOR GRADERS • MOTOR SCRAPERS • TRACTOR SHOVELS
PULL-TYPE SCRAPERS • MOTOR WAGONS • UTILITY TRACTORS • POWER UNITS





Working on New Frontiers high in the Peruvian Andes

Mining specialists . . . men of construction . . . and a great fleet of giant Allis-Chalmers crawler tractors are changing a remote, mountain-top desert into a modern mining center.

Toquepala (*pronounced Toe-kay-páh-la*) is its name—a wilderness hidden deep in the ancient land of the Inca Indians, so bleak and devoid of rain it's truly a mountain-top desert. There, 11,500 feet above sea level, one of the biggest mining projects in history is now under way.

Among the first machines moved ashore at the start of this venture were big Allis-Chalmers tractor-bulldozers, and today they're part of the team that is breaking through the barriers to Toquepala. To span the 100 miles from the mine to the nearest seaport, these giant tractors are pushing aside sand and rock to help build a network of roads and a railroad . . . and they're biting into mountainous terrain to level a site for a new town of 10,000 people.

Thus, the might of modern construction machinery is helping to unlock the treasures of Toquepala, considered inaccessible just a few years ago. And when the ore is ready for processing, 14 huge Allis-Chalmers mills will start grinding up this 400-million-ton mountain of copper ore at the rate of 30,000 tons a day . . . free the valuable mineral from the waste and prepare it for concentration, smelting and refining. Then, Toquepala will be one of the world's great copper mining centers, and long-range needs for this vital metal will be supplemented by a new source of supply.

From trail blazing to processing, this mammoth project typifies Allis-Chalmers service to the mining industry—through an unusually wide range of construction, power and processing equipment. It also typifies Engineering in Action . . . bringing better living to more people wherever it goes. ALLIS-CHALMERS, GENERAL OFFICES, MILWAUKEE 1, WIS.

Toquepala is a project of the Southern Peru Copper Corporation, which is stripping more than 120 million tons of overburden to reach the actual ore deposit at the mine. Major construction work for the roads, railroad and town site is being handled by two famous American contractors, Utah Construction Company and Morrison-Knudsen Company, Inc.

move ahead with

ALLIS-CHALMERS

...power for a growing world

At sea level . . . or 14,000 feet up

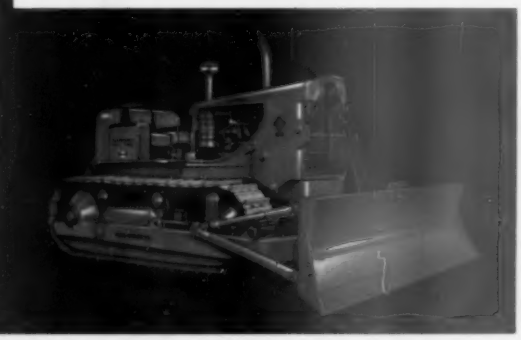
Allis-Chalmers HD-21's are the tractors for your tough jobs



Big Allis-Chalmers tractor-dozers cut the rocky, mountain country to size to develop a town site.



Men and machinery conquer the mountain-top desert . . . push aside rock and sand to build access roads.



HD-21 — 225 net engine hp; torque converter drive; 56,260 lb (approx. as shown)

You, too, can have the outstanding performance Utah Construction Company and Morrison-Knudsen Company, Inc. are getting from the more than 50 Allis-Chalmers HD-21's at Toquepala. Call your Allis-Chalmers dealer now. He will demonstrate the HD-21 on your job at your convenience.

ALLIS-CHALMERS, CONSTRUCTION MACHINERY DIVISION, MILWAUKEE 1, WISCONSIN

move ahead with

ALLIS-CHALMERS

...power for a growing world

Form MS 1316

Litho U.S.A.



Bucket loader is preferred because it mixes the stone in loading

Roadstone *continued from page 104*

needs of the steel industry.

Now that washed roadstone is processed, the market has expanded and the plant can be kept running regardless of the needs of the steel industry or the weather in the rich farming area of Indiana. Since the roadstone deposit is in the top ledge, the quarry can be worked without disturbing stone in the lower part of the formation.

Mr. Dunn has ingeniously worked out two ways of supplying the washing plant which add to its flexibility and usefulness. When the old crushing and screening plant is working on roadstone, it sends stone to the washing section. When the old plant is working on metallurgical stone, the new system is kept supplied with roadstone reclaimed from stockpiles of unwashed oversize or from stores of washed oversize.

A long belt conveyor reaches out from the old plant to a 4-ft. gyratory crusher that crushes all stone headed for the washing plant. A truck-dump hopper with a belt conveyor permits trucks to bring in rock from stockpiles, and this system stands ready to keep the crusher operating at full capacity all the time. The crusher discharges a minus 1½-in. product to the inclined belt conveyor that takes it to the washing section.

The arrangement of the washing plant is very simple: two double-deck 4 x 12-ft. horizontal vibrating screens mounted over four steel bins. The first double-deck screen takes out unwanted oversize, usually plus 1½ in., and the unwanted dust, usually minus ⅛ in. The oversize is taken back to the truck-dump hopper to be recycled through the system. The dust is taken to fill. Removal of the dust in this way cuts down the volume of fines in the tailing water going to the settling pond.

All washing is done on the second horizontal vibrating screen. Three sets of perforated pipe above the top deck spray downward, and three more sets of pipes between the decks spray upward with great force. More than 1,000 gpm. of wash water is projected through the bed of crushed stone on the screen deck.

Mr. Dunn feels that horizontal decks on his new vibrating screens add to the efficiency of the system. It is no particular chore for the workmen to change screen cloths frequently, either to change sizes of the product or to put in new cloths. Any

Please turn to page 148



1958 has been a year of healthy consolidation. The generally lower level of new business we have had in common with most capital goods companies has given us a much needed opportunity to examine all our operations with the emphasis on sharpening efficiencies and stepping up the rate of our technological advance. In both, we have made substantial gains.

The sharpening of efficiencies is evidenced by a number of changes. Our manufacturing costs and delivery times are both noticeably better. A reorganization of our Research & Development group has resulted in a greater emphasis on basic research and a speeding up of development of new processes and equipment. This will ultimately include more and better manpower in both these areas. We have simplified routines, eliminated many nonessential operations and projects which seem to creep in during boom times. This allows us to proceed with less staff, but a more able and experienced one.

The current lag in new business has been much less noticeable overseas, and we have been concerned with a number of very large and significant projects abroad. Our subsidiaries have continued to progress and are contributing substantially to the financial balance of our consolidated effort.

PULP AND PAPER — A Canadian pulp producer will install a complete D-O Bleach Plant, and Bleach Washers will be utilized in expansion of an Indian groundwood mill. Late in the year Brownstock Washing and Recausticizing Systems, Deckers and hypochlorite preparation equipment were ordered for a new French mill. At a second French mill, a large Brownstock Washing System was put into operation in 1958.

Recausticizing Systems will be installed at two other new mills, one producing paper in India and the other linerboard in the western United States. Continued evidence of widespread acceptance of the American Disc Filter has been demonstrated by the number of orders entered for this efficient saveall. Also of interest were filters ordered for local manufacture from our Australian subsidiary and our Japanese representative.

FOOD PRODUCTS — In the citrus industry, Merco Centrifuges and Mercone Screening Centrifuges have been applied to the finish-processing of orange juice prior to concentration. Successful also has been application of the Centrifuge-Precoat Filter combination to apple juice processing.

Corn starch washing systems consisting of various combinations of centrifugal equipment were ordered for mills in the United States, Colombia, Holland and Mexico. And, as in so many previous years, the sale of RapiDorr Clarifiers and O-C Filters for cane sugar processing has contributed heavily to orders entered.

FLUOSOLIDS SYSTEMS — Applications of the FluoSolids system were broadened in 1958 to include heat treatment or drying of such materials as foundry sand, phosphate base food products and concentrated detergent and for carbon reactivation. Another new application will be partial roasting of sulfide concentrates at one of Canada's largest smelters.

Other FluoSolids projects now in the design stage or under construction are slag dryers for India and Alabama; pyrite roasters for Spain, South Africa and California; a coal dryer for a midwestern producer and two-stage arseno-pyrite roasters for installation in the gold fields of northern Canada. Now in operation or under construction around the free world are over 100 FluoSolids installations on such proven applications as sulfide ore roasting, coal and slag drying, and limestone and phosphate rock calcination.

COAL — Fine coal recovery and water clarification will be accomplished at Eastern and Australian cleaning plants in large Thickeners ordered within the past year. In a number of instances, an American Filter and ODS Pump will complete the fines recovery circuit.

IRON AND STEEL — Proof of the versatility of the DSM Screen is its application at three points in the heavy media cyclone flowsheet. In its first use on the Iron Range it has considerably reduced magnetite losses. In this general field also, the Thickener-Filter combination has continued to be widely applied to recovery of blast furnace flue dust.

CHEMICAL — In 1958 new developments highlighted Dorr-Oliver activity in the far-flung chemical industry. Among the foremost of these was the plastic Filter, a rotary drum vacuum unit constructed of plastic with glass fiber reinforcing. Initial orders indicate the applicability and economy of this unit for mildly corrosive applications.

A second major development, the Merco H-30 Centrifuge, provides the chemical industry with a high capacity, high speed unit capable of clarifying up to 600 gallons of slurry per minute. The product of nearly four years of testing, this machine has substantially reduced operating power requirements per gallon of feed. One of the first commercial applications will be crystal separation at 90° below zero.

Result of yet another new design program is the expanded line of Type L centrifugal pumps. Here, three new designs provide increased capacity and head range and reverse inlet flow for operating speeds of both 1750 and 3500 rpm. In addition, Hypalon elastomer lining is now standard for both Olivite and ODS Pumps.

During the year a German manufacturer ordered the eighth and ninth Horizontal Filters for dewatering artificial resins, and domestic producers purchased Horizontals for such applications as washing ammonium sulfate and nitrocellulose and filtering potash and copperas. Also in the potash field was use of the DSM Screen for debrining crystallizer underflow.

GENERAL METALLURGICAL — Development of an air-lift agitation system for the American Filter has provided a third method of maintaining heavy solids in suspension prior to filtration. Complementing the conventional paddle and swing agitators, this new method has been extensively tested at operating installations.

U. S. and Chilean producers have ordered giant Thickeners with the strongest turntables ever fabricated, and a copper mill in the Belgian Congo will utilize ten large vacuum Filters in a current expansion. New construction at U. S. cement plants includes the three largest Slurry Mixers ever furnished, each 120 feet in diameter, as well as a variety of smaller machines.

WATER — Here also new construction and plant expansions resulted in application of a variety of D-O pre-treatment equipment. Two large Hydro-Treator mechanisms will supplement four additional units already in operation at Miami, Florida, and Topeka, Kansas will utilize Presedimentation Clarifiers and Flocculators. PeriFilter systems will be installed at Peoria, Illinois and Leander, Texas, and in Mexico City the first PeriFilter of a new, simplified control design is now going into operation.

Not the least of our gains in efficiency has resulted from new and vastly improved headquarters facilities both here and abroad. Our new International Headquarters was completed here in Stamford in July, the staff of D-O NV expects to move into its own new office building in Amsterdam shortly, and our associates in both Brussels and Paris are enjoying new and excellent facilities in co-operatively owned buildings.

In every respect, we are better prepared than ever before to take advantage of the upswing to come and to give better service to our customers throughout the world. This betterment, of course, could only have come about by the diligent and co-operative efforts of our total staff, and to them belongs the credit for the work done.

J. D. Hitch, Jr.
President

November 5, 1958

D-O, American, Merco, RapiDorr, FluoSolids, Densludge, DSM, Olivite, and PeriFilter—Reg. T.M. U.S. Pat. Off. Mercone, CompleTreator and ODS are trademarks of Dorr-Oliver • Hypalon—Reg. T.M. E. I. du Pont de Nemours & Co.

Enter 1503 on Reader Card



E. W. Bauman, NSA managing director, gave his annual report to the producers. He said that stricter aggregate specifications should be watched carefully



Harold Lynn, Bethlehem Steel Co., G. W. Weiss, industry historian, Roy McMindes, Sheridan Slag Co., and T. B. Tomlinson of Bethlehem Steel Co. commented on the good organization of the meetings

Looking to future, slag men push sales

Promotion and research share NSA spotlight

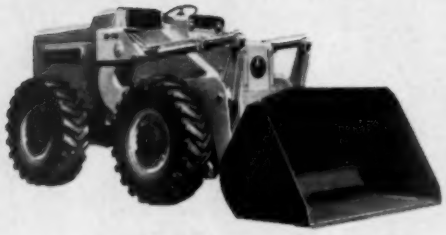
THE IMMEDIATE PROBLEM facing members of the National Slag Association is how to maintain production when blast furnace operations are reduced. A few fortunate producers of processed blast furnace slag report that local requirements have exceeded their new production, forcing them to draw heavily on inventories or old reserves.

At the association's two-day 41st annual meeting, held in Washington in October, emphasis was given to the continuing problems of boosting slag sales in the face of limited supplies. The carefully scheduled program included meetings on promotion and advertising, tightening specifications and continuing research programs, all topics discussed in anticipation of higher sales. Before the meeting, each member present was given a program, a complete set of reports and promotional material compiled by E. W. Bauman, managing director.

Two outstanding promotional pieces were introduced at the sessions at the Mayflower Hotel. One of these—a 12-page pamphlet—outlined the physical properties and outstanding applications of each of the three major types of processed blast furnace slag available from most members of the association—air-cooled, expanded and granulated slags. This information is presented in concise, easily readable language and it should prove useful to architects, concrete products producers and other prospective users of blast furnace slags.

The research programs and research facilities of the association were revealed in an eight-page, four-color folder. This booklet not only demonstrates the organization's understanding of the great need for continuing product research, but shows the NSA's recognition of professional standards in advertising and promotion.

Please turn to page 114



It COSTS LESS To BUY the BEST

NEW MODEL H-90

GIVES YOU MORE VALUE FOR YOUR MONEY...MORE CARRY CAPACITY...MORE PERFORMANCE...MORE DEPENDABILITY

When it comes to investing money in equipment which must earn money, you can't afford anything but the best. Thousands of owners have found this to be true of the famous HO "PAYLOADER"... thousands more will find it even more so in the new, improved Model H-90.

Full 9,000-lb. Carry Capacity

You can lift loads up to 15,000-lbs., but you can CARRY LOADS up to 9,000-lbs. which means you can use buckets ranging up to almost 4 cu. yds., depending on the weight of the material. Because the bucket tips back 44° at ground level, you can carry 9,000-lb. loads closer to the machine and lower with better balance, stability, speed and less spillage. All excess "dead weight" has been eliminated and through balanced design, the H-90 can carry more pounds in the bucket than comparable machines weighing as much as 3,000-lbs. more.

More Powerful Breakout

A breakout force of 21,000-lbs., almost the entire weight of the machine, can be applied to the cutting edge of the bucket through unique pry-out pads. This enables you to get full bucket loads in the toughest digging.

Choice of Four Engines

The new H-90 gives you a choice of two gasoline engines and two diesel engines: either the 125 H.P. Hercules WXLC-3 or the 134 H.P. I-H U-450 in the gasoline, and the 122 H.P. Cummins JN-6-B1 or the 126 H.P. G.M.C. 4-71 in the diesel.

Extra Heavy-Duty Planetary Axles

Because tractor-shovels of this size and capacity are subjected to greater than average stresses and strains, the H-90 "PAYLOADER" planetary axles are special, extra heavy-duty type with power transfer differentials.

Full Protection for Long Life

The brakes of the front wheels are sealed to prevent scoring and glazing by foreign matter. Large oil-bath air filters and cartridge-type oil filter protect the engine. Two cartridge-type oil filters protect the hydraulic system oil and the transmission-torque converter oil.

Easy, Full-Power Operation

Power-shift transmission with three speeds forward and reverse, plus twin-cylinder power-steer and 4-wheel power brakes, assure fast operation with minimum operator effort... promote a high production rate the full shift.

More Attachments...More Uses

The widest choice of attachments are available, including these exclusive ones: Drott 4-in-1 bucket, Superior side-boom, Galion vibratory compactor, Ram black-top spreader... also blower, "V" and blade plows, angling back filler, scarifier, winch and others.

THE FRANK G. HOUGH CO. 1-B-1
705 Sunnyside Ave., Libertyville, Ill.
Send data on new Model H-90 PAYLOADER

Name _____

Title _____

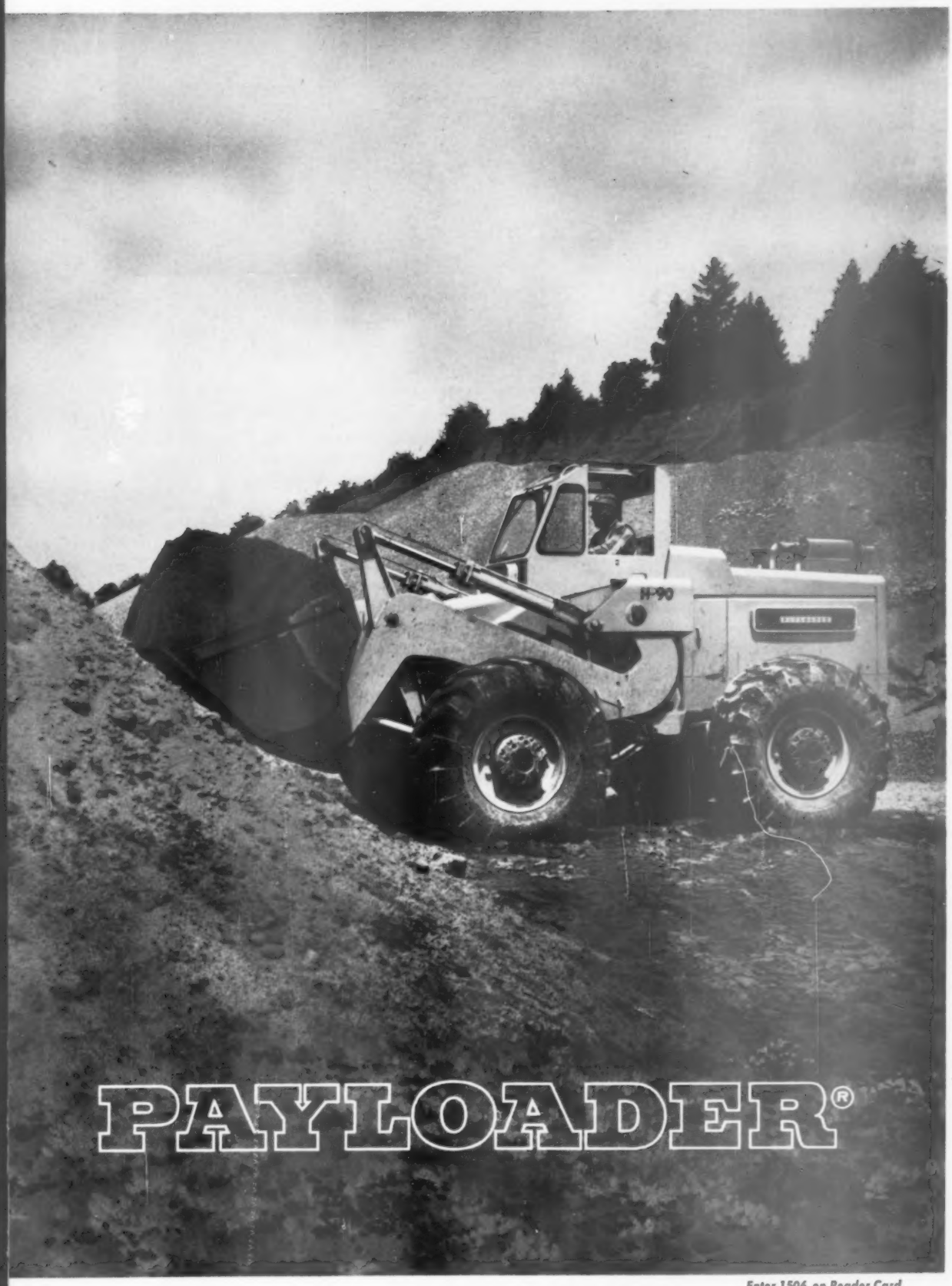
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HOUGH®

THE FRANK G. HOUGH CO.
LIBERTYVILLE, ILLINOIS
SUBSIDIARY — INTERNATIONAL HARVESTER COMPANY



Enter 1506 on Reader Card



Shirt-sleeved producers in the Advertising and Publicity meeting planned NSA's 1959 promotion campaign. Kenneth Dorman, U. S. Steel Corp., was chairman

Slag meet *continued from page 111*

The report of Fred Hubbard, director of research, emphasized the important role of research in the association's activities. His report covered the progress of half-a-dozen projects currently in the works. One five-year project is a study of the effects of several different aggregates upon black and galvanized steel pipe when used as fill around the pipe.

Another study, of prime importance to concrete products producers, concerns the volume change of concrete masonry units. Concrete products made with different aggregates, including blast furnace slags, have been tested for dimensional changes under several methods of curing. This project has not been completed.

Both Mr. Hubbard and Donald W. Lewis, chief engineer, reported the results of investigations of open-hearth residues. These materials have accumulated near steel-making centers over a period of more than 50 years since the open hearth was introduced in steel mills. It was pointed out that because of the reputation established by blast furnace slag as an all-purpose construction mineral aggregate, there is the possibility of open hearth slag finding its way to market. But until more is learned about the properties of this residue, its indiscriminate use could endanger the status of blast furnace slag.

The need for constant vigilance by members of the association, to prevent the misuse of this open hearth material as a substitute for processed blast furnace slag, was emphasized. A number of serious failures have been reported when fresh, or unprocessed, open hearth material was used as aggregate in bituminous or concrete pavements, as well as concrete products. However, it was found that little difficulty is encountered in the use of the material, properly applied, for constructing parking lot or storage area surfaces when used in an unconfined condition. The association is continuing its investigation to determine where best this material can be utilized.

The annual report of the managing director indicated that there were many specifications problems during the past year. These have been raised by several state highway departments, specification-writing organizations and private engineering consultants. The maintenance of uniformity of the processed blast furnace slag shipped to users is a constant problem, but one which can be resolved by continuing an established association policy of close cooperation between producers and users. Mr. Bauman emphasized the need for producers to maintain the high standards for size gradation and quality which have been agreed upon in specifications.

A number of bulletins and publications have been prepared during the year which are of interest to the members of the association. These include reports on slag accepted for publication by the ASTM and ACI; a slag block manual which is in the process of publication; a skid resistance bulletin; a report on lightweight concrete released through the ACI.

Guest speaker at the annual banquet was Francis C. Turner, Deputy Commissioner and Chief Engineer, Bureau of Public Roads. He outlined the impact of road building programs which will cost more than $100 billion during the next 20 years. These federal, state and local highways will do more than benefit the aggregates producer; they will bring new markets and prosperity to farmers and business in remote parts of the country and also spread education and culture.

Also adding to the education of the members of the association was the presentation of a very

Please turn to page 138

Another EUCLID product improvement!



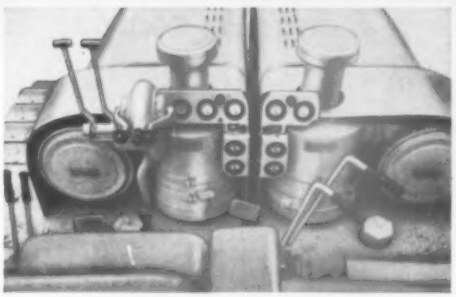
Donaldson dry-type air cleaner in TC-12 Crawler

One of the reasons the new series Euclid TC-12 Crawler provides more work-ability with less down-time is the unequalled accessibility of all major components for quick, easy servicing.

As shown in the photograph, the two Donaldson dry-type air cleaners, one for each engine, are conveniently located for easy access. Both pre-cleaner and secondary filter can be serviced in a fraction of the time required for oil bath cleaners and there's no mess—just empty the pre-cleaner dust cup, clean and replace a paper element in the secondary cleaner.

HIGH EFFICIENCY CLEANER INCREASES ENGINE LIFE

The Euclid TC-12 Crawler is now being built with the Donaclone dry-type air cleaner as standard equipment. This 99.9% efficient cleaner reduces engine wear caused by dust—increases the service life of the engine and helps maintain top operating efficiency. Engine manufacturers say that 8 ounces of



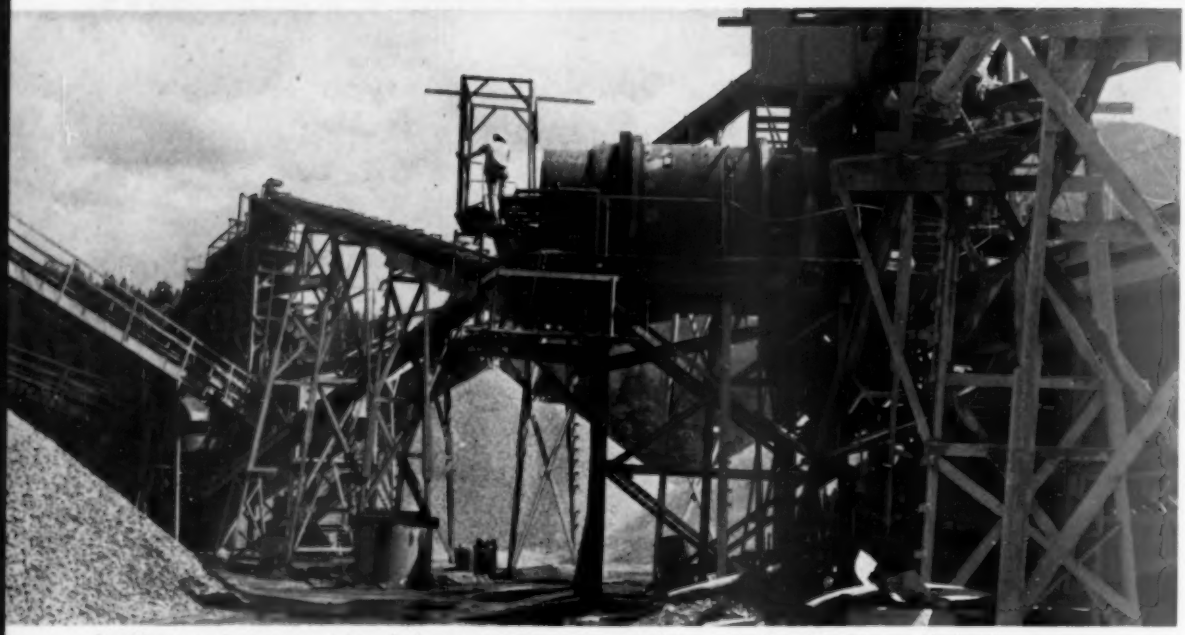
abrasive dust can ruin an engine in a short time. Because of the tremendous volume of air that passes through an engine in a single shift, the importance of air cleaner efficiency is obvious. That's why Euclid uses this Donaldson cleaner on the new series TC-12 . . . it's another example of constant product improvement that makes Euclid your best investment.

EUCLID Division of General Motors, Cleveland 17, Ohio

GM GENERAL MOTORS EUCLID

EUCLID EQUIPMENT

FOR MOVING EARTH, ROCK, COAL AND ORE

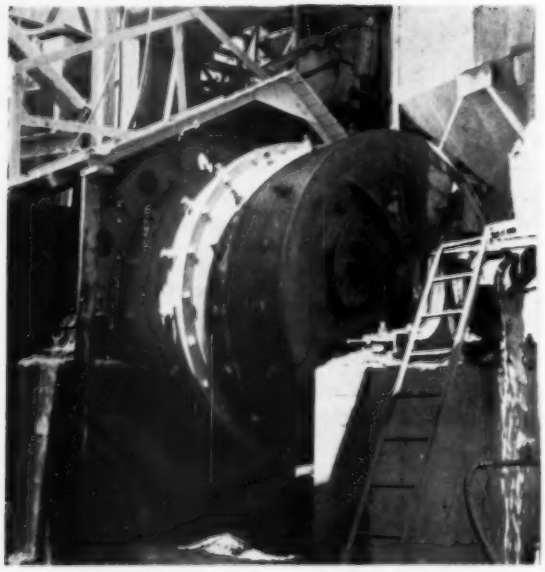


Scrubber is in first tower, right, which also contains screens, scalping tank, liquid cyclone and ball mill

Problem: dirty pit-run, fines lack

Scrubber, scalper, ball mill help solve it at Baker Dam

Ball mill is efficient sand maker



ONE MILLION TONS OF WASHED AND SIZED AGGREGATE meeting tough specifications will be used in the upper dam on the Baker River, 130 miles northeast of Seattle, Wash. Since the pit-run at Associated Sand & Gravel Company's nearby plant is not inherently clean and is low on fine sand, some unusual scrubbing and sand-recovery techniques are needed to prepare an acceptable product.

Scrubbing begins early in processing, when the 6 x ¾-in. material is removed on wet screens and sent to an 84-in. super-scrubber. Similarly, the ¾ x ¼ in. is removed and sent to a coarse material washer mounted over a truck bin; overflow is stored on the ground. The washed product from the super-scrubber is belt-conveyed to a separate screening tower for the final separations. At this tower, a gyratory crusher takes care of any needed secondary crushing.

The coarse material re-washer used for the minus ¾-in. gravel consists of two parallel screws,

Please turn to page 118

PRODUCER

The Wemco Sandclone:

The Cyclone Unit for New Economy and Precision in Sand Preparation

The secret is in the design — the use of relatively low feed pressures in producing the high velocities needed for efficient separation.

Wemco Sandclone action is *positive* . . . assuring profitable production, precision separation of coarse and fine particles

Its operating economies: low inlet pressure and pump speed . . . minimum pump power and wear; high pressure molded rubber liners for long life.

Get *all* the facts — and the operating potential — of the Wemco Sandclone.



Depend on the Wemco Sandclone and the skills behind it



WEMCO®

Western Machinery Company • **650 Fifth St.** • **San Francisco, California**
and throughout the world

Enter 1535 on Reader Card



Baker Dam, to be completed next year, will have used 1,000,000 tons of aggregate

Baker dam *continued from page 116*

each about 14 in. diam. and 10 ft. long and operating at relatively high rpm. Paralleling and slightly above the long axes of the screws is a 3-in. diam. pipe with ¼-in. perforations through which high-pressure water impinges on the gravel below. The washer is mounted over truck bins.

Four sizes of gravel and one size of sand are produced at the plant. Coarse aggregate sizes are 6 x 3 in., 3 x 1½ in., 1½ x ¾ in. and ¾ in. x 4 mesh. The plant has an output capacity of 300 tph. with about 350 tph. going into the raw gravel surge pile.

The dam is being built for the Puget Sound Power and Light Co., a private utility. Baker River is a tributary of the Skagit River, in a general area abundantly supplied with hydro-electric dams fed by the eternal snow of the Cascade Mountains. Aggregates prepared from the deposits like the one worked by Associated Sand & Gravel three miles below the damsite—possibly a combination of glacial drift and water-borne sources tied to high elevations—are usually clean materials but deficient in fine sand (the high stream gradient tends to carry away the smaller sizes of material). Although the pit-run here at Baker Dam does not fit into this general pattern of cleanness, it is lacking in fine sand.

To get the needed fines, almost every modern sand-recovery unit is used, including a water scalper and a liquid cyclone, plus a ball mill to manufacture more fines. Few ball mills are in use in the sand and gravel industry—rod mills seem to have pre-empted the field. But if more fines in the minus 48 mesh or minus 100 mesh range are needed, the ball mill has several advantages.

Two formulas based on experience apply here:

—The smallest grinding medium in a mill should be able to grind or crush the largest particle.

—The amount of fine grinding is proportional to the number of impacts.

Therefore, if sand in the minus ⅜-in. range is to be further reduced, a steel ball having a relatively small diameter and weighing just a few pounds will do the crushing; and obviously a mill

Please turn to page 120



Adverse haul conditions reducing your output?

Put your hauling operation on a high-production basis — despite restricted areas, rough winding roads, or bad weather conditions — with rugged LeTourneau-Westinghouse Tournapull® Rear-Dumps. Here's how these pivot-steer haulers can cut minutes off your haul cycles.

Speeds loading — Because the Tournapull prime-mover pivots 90° right or left, you can place L-W Rear-Dumps under the shovel *quick*. Low, wide bowl-opening gives shovel operator big, easy target . . . cuts spillage. Production delay for clean-up of pit-floor is minimized. Three-layer, all-steel bowl floor withstands pounding of heavy rocks. Sloping sides deflect load shock, cushion floor area with layer of material.

Hauls anywhere — Equipped with exclusive power-transfer differential, L-W Rear-Dump keeps load moving steadily through mud and slippery footing, over uneven ground, and around sharp turns. Big, low-pressure tires give top flotation — low center of gravity assures stability on uneven terrain.

Dumps quick, clean — Flick of switch on control panel instantly activates point-of-action electric hoist-motor. Body raises quickly, to desired angle. At full-dump position, edge of bowl is low behind rear wheels. Material dumps clean. It cannot roll forward to lodge against wheels, nor pile under rear end. Streamlined body sheds stickiest material readily.

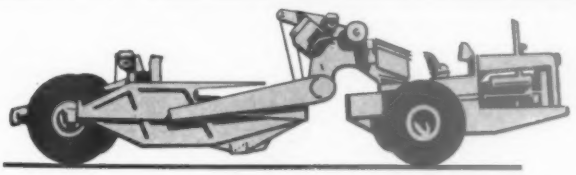
Safe, effortless control — Both dumping and steering are actuated by a quick, simple finger-tip movement on electric switches. Giant air brakes — combined with Electrotarder, for auxiliary non-wear fly-wheel brake power — add safety.

Maintenance is low, because highly-simplified L-W Rear-Dumps eliminate so many vulnerable parts that cause trouble on conventional haulers. All-welded, reinforced steel bowl resists toughest wear and shock.

Compare its performance

Let us demonstrate a haul-anywhere L-W Rear-Dump at your pit. Compare its time-saving performance against your present haulers. Select from 3 sizes: 11, 22, and 35 tons. Call or write for complete information.

R-1862-MQ-1



Converts to easy-loading scraper

When rock-hauling work is completed, you can interchange the L-W Rear-Dump trail-unit with an easy-loading scraper, behind the basic Tournapull prime-mover. You'll then have a double-duty tool for stripping and roadbuilding — or to rent out profitably for all types of earthmoving projects. Scraper is available for about ¼ the cost of complete original L-W Rear-Dump. Other specialized trail-units to increase prime-mover's usefulness also available.

LeTOURNEAU-WESTINGHOUSE COMPANY, PEORIA, ILLINOIS

A Subsidiary of Westinghouse Air Brake Company

Where quality is a habit



Second tower has screens, secondary crusher (lower left)



Shovel and 3 rear dumps supply 350 tph.

Baker dam *continued from page 118*

can contain a great number of small balls as compared with rods, so the number of impacts per revolution of the mill is infinitely greater. In general, a rod mill is hard to beat for manufacturing sand; but if fines alone are wanted, a ball mill saves installation costs and power requirements.

The ball mill installed by Associated Sand & Gravel is powered by a 200-hp. motor and operates in open circuit, producing about 30 tph. of material that is 65 to 70 percent minus 48 mesh. The feed is minus ⅜ and minus ¼-in. gravel. The mill's product is returned to the plant feed below the water scalper.

The eight-spigot water scalper is augmented by a 24-in. liquid cyclone. Twin 36-in. screws are used for dewatering.

The sand product has a fineness modulus of 2.86-2.92 and the minus 48 mesh is held at 18 percent. Sand is stored in three piles with a capacity of 8,000 cu. yd. by a shuttle belt operating in a high structure over the piles.

The flow of material starts in the pit, where about 2-3 feet stripping is needed. A 2½-cu. yd. shovel loads two 18-cu. yd. rear dumpers which make the short haul—only a few hundred feet over a flat grade—to the primary crusher in the pit.

This 25 x 36-in. jaw crusher is fed by a vibrating grizzly and is set to deliver a minus 6 in. gravel. Two 24-in.-wide belt conveyors deliver the crusher product to a 3,000-ton live surge pile ahead of the preliminary screening tower.

A feeder takes the material from the surge pile and delivers it by belt conveyor to the first tower, where the preliminary screening and scrubbing operations are done on the plus ¼-in. gravel. In this tower are two 5 x 12-ft. double-deck, wet, step-decked vibrating screens; the super-scrubber; the water-scalper tank; the liquid cyclone and the ball mill.

In the second tower are two more screens, identical with those in the first tower, and the secondary crusher. In this final tower the three sizes of coarser gravel are prepared and binned; the bins overflow to stacker belts which store the gravel on the ground. This material, the ¾ x ¼ in. stored on the ground and the concrete sand are reclaimed by front-end loaders. Rock ladders are used for the coarser sizes.

Puget's Baker River hydroelectric project began in June, 1956, and is scheduled for completion in 1959. The relatively high elevation slows construction somewhat during the winter months. Rainfall is high, with some snow.

Associated Sand & Gravel Co. has three other plants—its main one, near Everett, Wash., a 150-cu. yd. per hour portable and a crushing plant. In addition, three asphalt plants are operated by the company. Howard F. Sievers and George P. Duecy are partners; R. W. Evans is superintendent of the aggregate operations. **END**

MAJOR EQUIPMENT USED BY ASSOCIATED SAND & GRAVEL

Shovel (2½-cu. yd. diesel, 80-D)	Northwest Engineering Co.
Trucks (3, 18 cu. yd.)	Euclid Div., General Motors Corp.
Primary feeder	Syntron Co.
Primary crusher (25 x 36 in.)	Smith Engineering Works
Surge pile feeder	Syntron Co.
Vibrating screens (4, 5 x 12-ft. 2 deck, wet, step-decked F-600)	W. S. Tyler Co.
Water scalper, 8-spigot	Eagle Iron Works
Dewatering screws, twin	Eagle Iron Works
Liquid cyclone, 24 in.	Dorr-Oliver Co.
Liquid cyclone pump	Allis-Chalmers Mfg. Co.
Waste pump	Allis-Chalmers Mfg. Co.
Ball mill, Marcy No. 84	The Mine & Smelter Supply Co.
Front-end loader	Clark Equipment Co.
Super-scrubber, 84 in.	Smith Engineering Works
Coarse material re-washer	Smith Engineering Works
Secondary crusher, 13-B	Smith Engineering Works

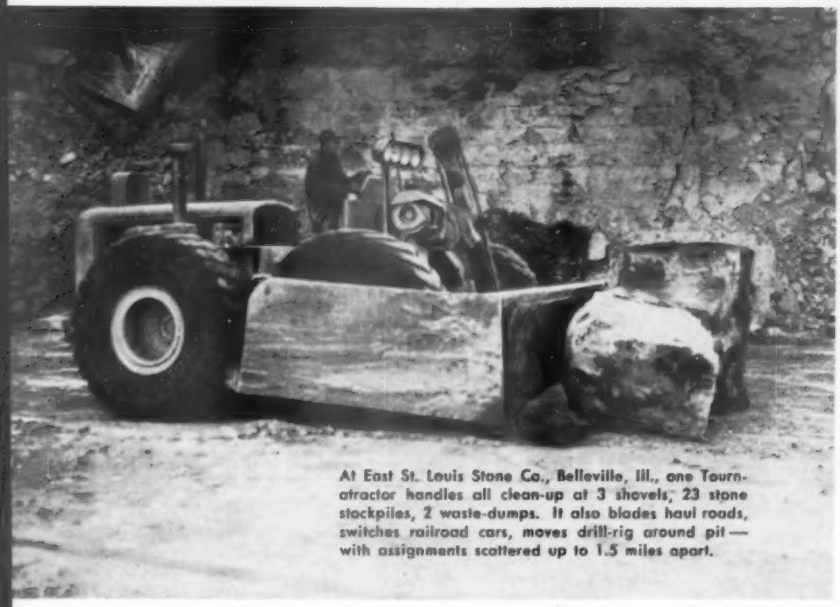
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One Tournatractor — replacing two crawlers — has speeded clean-up at Kaiser Steel Corp.'s Eagle Mountain Iron Mine in California. Besides servicing 3 shovels, this 210 hp speedster handles jobs like towing compressors and moving frame supports for electric cable.

How to handle scattered pit clean-up and maintenance

at lowest net cost



At East St. Louis Stone Co., Belleville, Ill., one Tournatractor handles all clean-up at 3 shovels, 23 stone stockpiles, 2 waste-dumps. It also blades haul roads, switches railroad cars, moves drill-rig around pit — with assignments scattered up to 1.5 miles apart.

Pit-and-plant "housekeeping" nowadays is an economic must. To maintain profits you need to keep pit surfaces, haul roads, plant yards, and dump areas clean, level, and drained. Good "housekeeping" means faster hauling, greater safety, longer tire and truck life, lower maintenance, faster positioning of haulers, fewer impurities in your pit product. All these add up to more production at lower unit cost.

Scheduling adequate clean-up . . . at reasonable cost . . . isn't always easy. If areas needing clean-up are far apart, the machine often given this job — a crawler-tractor — may spend as much time (if not more) just getting *to* and *from* an area as it does *working* there. And no cost-conscious management likes paying a half-hour's costs just for 10 minutes of dozing!

Some pit owners try to solve this problem by keeping crawlers full-time at each location needing frequent clean-up. But owning, operating, and maintaining that many tractors is likely to cost as much as is gained. Even if the rigs used are depreciated veterans — retired from production duty — repair bills mount sharply, and multiple machine operating costs are high.

Soundest solution: right machine

As with many pit problems, the real answer is the *right tool*. Tournatractor® is such a machine. With 17.2 mph travel speed, it gets to scattered job areas *in a hurry*. A half-mile is less than 2 minutes away, a quarter-mile less than a minute. With this LeTourneau-Westinghouse clean-up and emergency unit in your equipment line-up, you can provide high-quality maintenance anywhere and everywhere in your operational area — quickly, easily, economically.

Big, powerful work-horse, too

Fast-traveling Tournatractor has plenty of power and traction to handle any tractor assignment. It delivers 210 hp through an anti-friction power train and torque-converter transmission. Its 4 low-pressure, 2-foot wide, ground-gripping tires provide excellent traction. Blade control is via instant-response electricity. Weight is close to 15 tons.

Talk to a LeTourneau-Westinghouse Distributor about your clean-up problems. He'll offer helpful suggestions . . . give you full facts, and a demonstration, of the modern, high-speed machine designed to solve your hit-and-run clean-up problems in pit, plant, dump and stockpile areas. CT-1645-MQ-1

LeTOURNEAU-WESTINGHOUSE COMPANY, PEORIA, ILLINOIS

A Subsidiary of Westinghouse Air Brake Company

Where quality is a habit



Hydraulic monitors cut into pile of matrix deposited by dragline. Dredge pump then pulls slurry from field sump

Phosphate, from pit to plant in three steps:

Stripping, sluicing and pumping

by Walter B. Lenhart

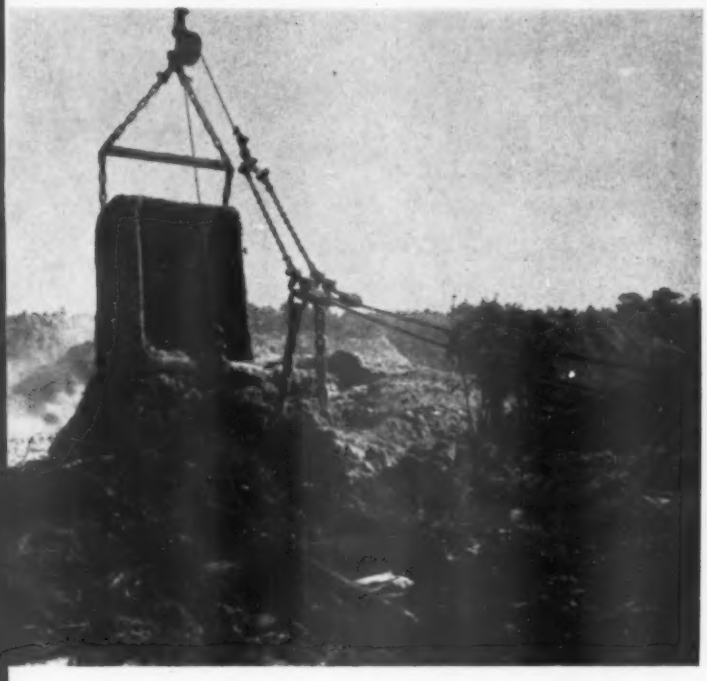
CHEAP, EFFICIENT HYDRAULIC TRANSPORTATION of raw material is being pioneered in central Florida by eight big phosphate companies. One major producer is American Cyanamid Co., which pumps phosphate-bearing matrix up to five miles from the pit to a new multimillion-dollar, million-ton-per-year washing plant at Orange Park.

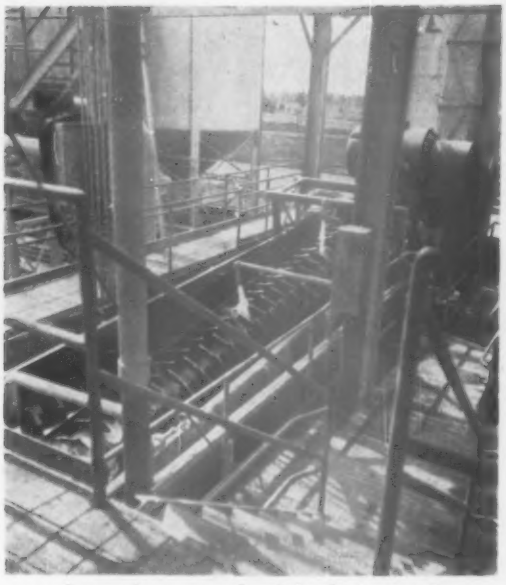
Key to this low-cost pumping is "gunning"—cutting up the material with high-pressure water from hydraulic monitors or guns. This is the only preparation needed for pump-and-pipeline phosphate transport, because the material ranges from fine sand to pebbles. No crushing is needed—just a simple screening-out of the few oversize rocks.

Stripping and mining are preceded by pumping to drain the swampy land. Then two walking draglines with 17-cu. yd. buckets strip off the 10 to 30 ft. of overburden and dig out the clay-bound ore, which looks like a mixture of yellow clay and sand. The draglines dig at a rate of 1,000 to 1,100 cu. yd. per hour; the ratio of strippings to matrix is 3:1. Strippings are cast back into worked-out sections of the pit and the phosphate matrix is dumped into two field sumps or "wells."

Three guns with 2-in.-diam. nozzles play more than 4,500 gpm. of water on each sump. This water cuts up about 800 tph. of solids. Water pressure at the nozzles is 150 psi. Two of the guns slurry the matrix and the third breaks up the lumps and washes the material through a grizzly spaced at about 6-in. openings. Then a 16-in.-diam. dredge pump starts the material on its way to the plant, a distance as great as five miles, depending on the location of the area being worked. The slurry is pumped at a rate of 7,000 gpm.

Although dredge pumps are less efficient than slurry pumps, there's a good reason for their use. The matrix may include rocks 9 in. in one dimension; clearances and impeller eye openings consequently must be large. On the pumps used by American Cyanamid, the diameter of impellers is 39 in. The pumps are driven by 800-hp. motors and full load speed is 590 rpm.





Log washers are used early in plant processing

The pipeline is the second component of a hydraulic transportation system. The abrasion-resistant pipe used is 16-in.-OD seamless, spiral welded, in 50-ft. lengths jointed by bolting together flanges welded on the ends. Wall thickness is $\frac{5}{16}$ in. The slurry is pumped at about 40 percent solids. Minimum pipe velocity is 10 fps. Coarse material wears the bottom of the pipe faster than fines, so the pipe is turned 90 deg. as wear proceeds. As much as 10 million tons of material can be sent through a 16-in. line before it wears out.

One or two 16x16-in.-diam. booster pumps are used between relays. Vents at convenient points on the pipelines to the washer take up any shock from water hammer that might break pipeline or pump case.

The "gunning" in the mine and the subsequent scrubbing in the pipeline and through the several pumps is often an important phase of the operation, for it breaks up the clay balls and otherwise cleans the phosphate particles.

The compact, modern plant went into operation during 1957. It was designed and built by the producer. (American Cyanamid also has a large phosphate washing and beneficiation plant at Sidney, Fla., which was described in detail in the March, 1951, issue of ROCK PRODUCTS, page 74.) Drying, related processing facilities and main office are at Brewster, Fla.

The preliminary section of the washing plant

Please turn to page 142

The 16-in. spiral-weld pipe, a small field sump and relay pump are shown along five-mile pipeline





Truck tunnel entrance is center. Pit run is scalped and crushed, foreground, and washed and screened, background

Reclaim problem? Try truck tunnel

Utah firm uses 550-ft. underpass to speed shipments

THE INVENTIVENESS OF ROYAL W. SIMS is written all over his South East Sand & Gravel Co. plant, 16 miles from downtown Salt Lake City. As president of the enterprise, he has checked every design detail of the revamping which will step up capacity to nearly 700 tph.

One of the principal features of the new plant is the 550-ft. concrete truck tunnel for reclaiming concrete aggregates directly into trucks. The monolithic concrete structure is one of the longest truck tunnels in the country and it has openings every 10 ft. fitted with Sims-designed slide gates for rapid loading of several trucks at a time.

A second tunnel will be built parallel to the truck tunnel for a belt conveyor system which will supply a nearby ready mix plant with aggregates.

Sands and gravels are withdrawn through any of the 33 gates in the truck tunnel. A 20-ton truck can be loaded in little over a minute with truck drivers often loading their own trucks.

This quick loading is possible because of the design of the gates. Two horizontal gate plates are supported on roller bearing wheels which reduce sliding friction and eliminate binding. The gates are opened and closed with an ingenious arrangement of wire rope over small sheaves.

Piles of aggregates are built up over the tunnels with stacker conveyors. The depth of material over the tunnels will store enough aggregates during the winter to enable the sand and gravel pit to close down during cold weather.

Three sizes of sand are stored over the tunnels —concrete, masons and grout, as well as the occasional specialty specifications. Five sizes of gravel are regularly produced and stored for shipment. Of the total 700-tph. production, sand is expected to be about 300 tph.

Please turn to page 146

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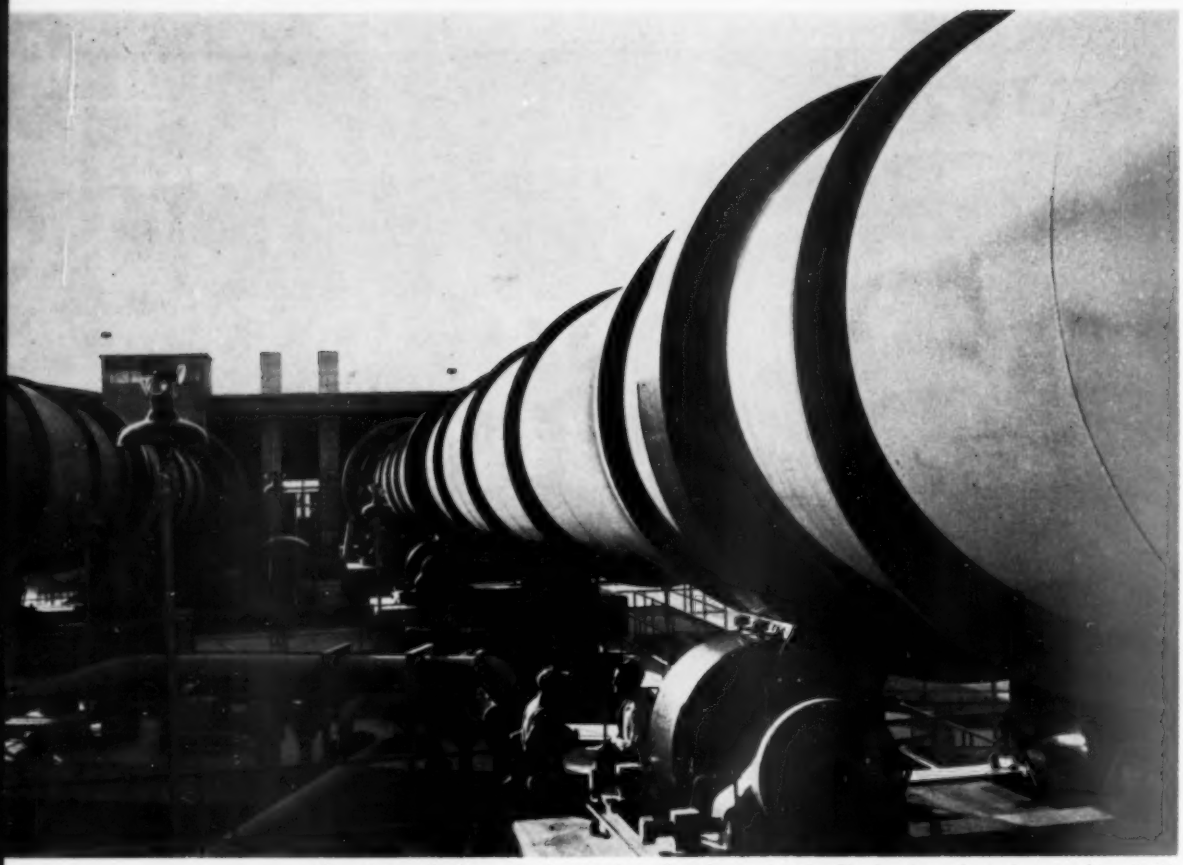
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New tires and rollers, like these at Lone Star Cement's Lake Charles, La., plant, show machine finish

How to cope with . . .

Tire and roller alignment problems

*by H. H. Wight**

This is the third and final part of a series on factors governing the performance of rotary kiln tires and rollers. This article deals with operating problems the author has studied. The first two articles appeared in the February and October, 1958, issues of ROCK PRODUCTS.

IF THE LUBRICATING of tire and roller surfaces results in an increased slide rate this will indicate that the highspot patterns are being kept apart or welding prevented. Such lubrication, to a smaller or larger degree, replaces the circumferential plastic-flow, axial-shear picture with a shearing of the lubricant. But lubrication will often lead to hydraulic erosion, and so to cavitation of surfaces.

It will be appreciated that when some lubricant is applied to a tire assembly, if the contact of tire against thrust roller is not altered, then the surfaces are not being lubricated, but only wetted by the oil. Even though the thrust roller contact may not be affected at a slow surface speed, oil will almost certainly have effect at the higher speeds of 50 fpm. and over.

An increase in contact with the bottom thrust roller (BTR) will show that the oil is unable to flow from the contact zone in time, and is thus carrying load, reducing the duty on the surface highspot patterns. On the other hand, if continuous contact with BTR is made at bottom kiln speed, this would show that the lubricant is probably carrying the entire load and eliminating most of the plastic flow of the steel surfaces. It is the intermediate situation that promotes hydraulic ero-

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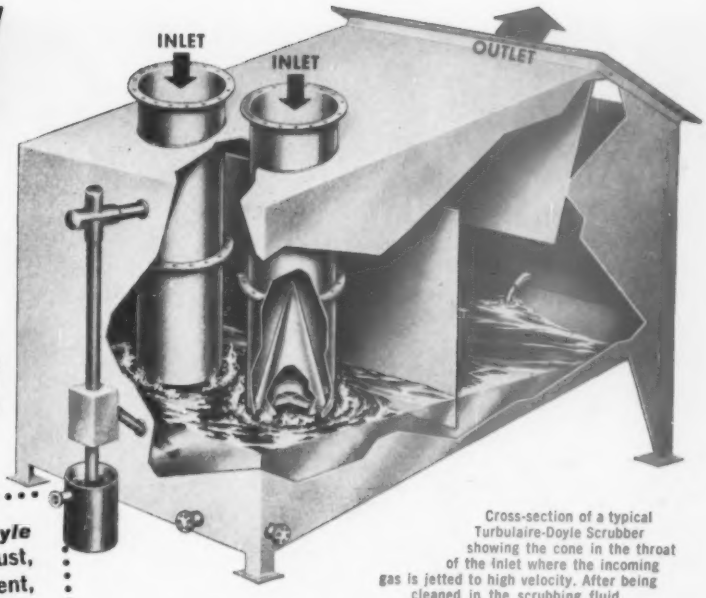
*Mr. Wight, M.E., B.S., AMIE (Aust.), AFAIM, is chief engineer for Adelaide Cement Co., Ltd., Port Adelaide, South Australia.

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Savings and efficiencies in Gas Scrubber Applications

with the

TURBULAIRE-DOYLE SCRUBBER



Cross-section of a typical Turbulaire-Doyle Scrubber showing the cone in the throat of the inlet where the incoming gas is jetted to high velocity. After being cleaned in the scrubbing fluid, the gas passes over spray eliminator baffles before it is discharged. Collected material is carried away by the circulating scrubbing liquid—is recovered as a liquid concentrate or slurry.

With addition of the Turbulaire-Doyle Scrubber to its line of advanced dust, fume and fly ash collection equipment, there is no industrial gas cleaning problem that Western Precipitation cannot handle with equipment of its own design. This assures your dust and fume control problem receiving the benefit of the industry's most complete "know-how" in all phases of gas cleaning operations.

The Turbulaire-Doyle Scrubber—a development of The Consolidated Mining and Smelting Company of Canada Limited and widely used in its own diversified operations—is now made available to industry by Western Precipitation Corporation under a license arrangement with Cominco.

Actual plant records, compiled over long periods of service, show the Turbulaire-Doyle Scrubber to be unique among commercially-available scrubbers in the multiple advantages it offers...

★ *High Collection Efficiencies*—generally 97% to 99%!

★ *Fine Particle Collection*—including those in the fume range!

★ *Low Liquid-to-Gas Ratio*—only 1 to 5 GPM per 1000 CFM!

★ *Wide Application Flexibility*—readily adaptable to various types of corrosion-resistant materials!

SIMPLE, TROUBLE-FREE DESIGN

The Turbulaire-Doyle Scrubber impinges dust-laden gas at high velocity into a bath of scrubbing liquid. The high velocity forces the gas and dust particles to penetrate deeply into the liquid for complete wetting and cleansing. A cone in the gas inlet nozzle, just above the surface of the scrubbing bath, provides the jetting action that assures outstanding performance from this unit. *There are no moving parts, nothing to require frequent maintenance!*

If you have dust or fume control problems where scrubber types of collectors are applicable, it will pay you to investigate the *years-ahead* advantages of the Turbulaire-Doyle Scrubber. Write, wire or phone the Western Precipitation office nearest you for further details.

TYPICAL APPLICATIONS INCLUDE:

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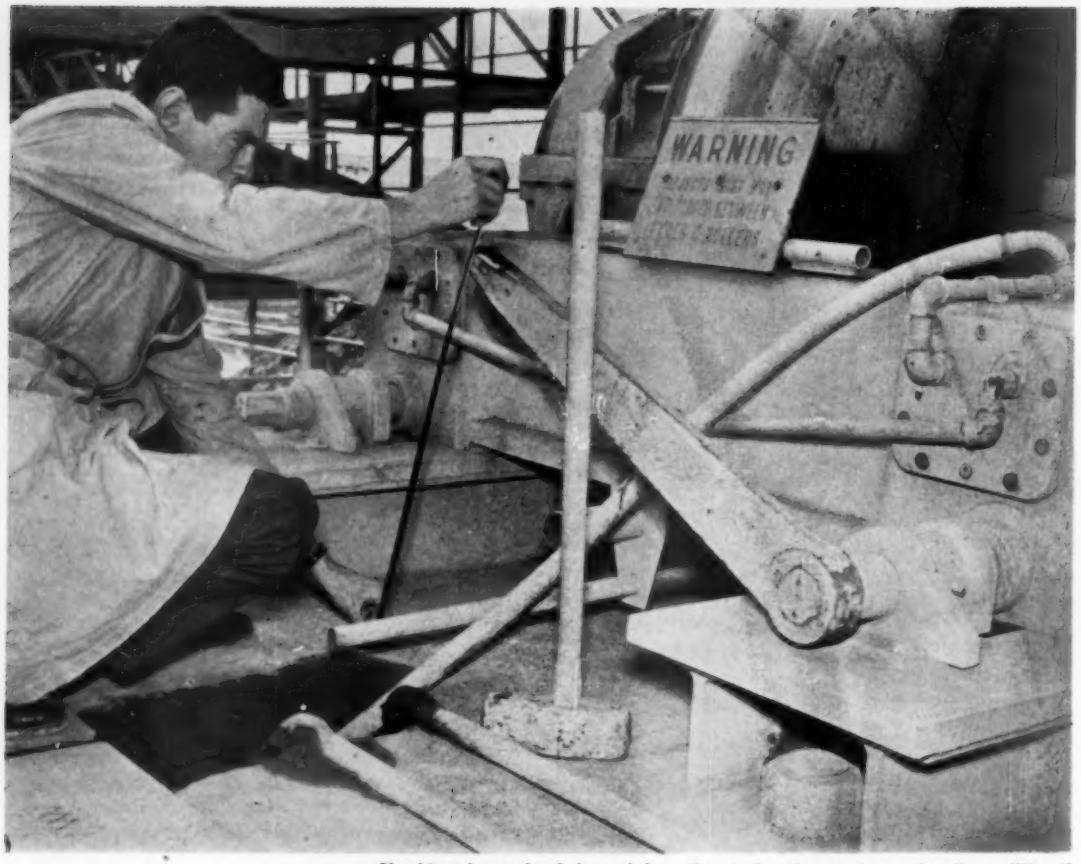
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Checking the angle of skew of the rollers is done by causing each roller to "float"

Kiln tires *continued from page 126*

sion, where there is a plastic surface flow and also a lubricant under pressure.

The angle of skew of 1.4 min. mentioned in earlier sections produces a 1.2 min. tangential skew. It was found in the field by steadily bringing all rollers to the same setting and maintaining a very light pressure on the top thrust roller, while all surfaces were still in new condition. They were then checked after several months by causing each roller in turn to "float." The adjustment screws were moved by using a 14 lb. hammer on the end of the heavy ring spanner which was 32-in. long. The correct amount of skew was obtained with 8 in. of travel of the end of the spanner. There was no difficulty with the use of "two inches of travel" as a standard adjustment.

The method used is shown in the accompanying photo, where an assistant is taking a measurement at right angles to the spanner before an adjustment is made with the hammer. Driving the spanner down will unwind the adjusting screw, and reduce pressure of the kiln on the top thrust roller. The other screw will be moved in an identical amount. When pressure on a thrust roller requires alteration, about half of the rollers are each given a small adjustment.

The concept of Hyperevs. The surfaces developed by the interaction of a tire and a roller, when axes are skew, are hyperboloids of revolution, or "hyperevs." Also, roller surfaces will become conical if skewed in the usual manner, but can be arranged to maintain a cylindrical shape, even though axes be skewed, if a simple procedure be adopted during the initial installation. This consists of giving a roller base plate a slight skew about a horizontal axis, in addition to the usual skew on the bed plate, thus eliminating the "toeing-in" of one end of a roller axis, and resulting in a skew that is tangential to the tire. The angle of tangential skew is the "helix angle."

Sooner or later any tire develops diametral clearance from the chairs upon which it rides, and unless the tire width is sufficient, a tire will lean back

Please turn to page 130



Ready-Mix plant owner says

"I Looked at Other Loaders . . . but I Liked Tractomotive best"

When it comes to buying equipment, careful consideration is given to its purchase by E. C. Voit & Sons, Inc., owner of a Ready-Mix concrete plant in Madison, Wis.

"I looked at other loaders," said Mr. Voit, "but I liked this 2-yd TL-20 TRACTOLOADER* best." He added that he also likes the Tractomotive dealer — "our relations have been mighty happy over the years."

A good product backed by a good dealer — that's the combination Tractomotive offers you—no matter where you are located. Allis-Chalmers construction machinery dealers throughout the world handle Tractomotive loaders and other Tractomotive products exclusively.

Like Mr. Voit, why not see what a modern TRACTOLOADER will do before *you* decide. On the TL-20 and TL-16, the exclusive *one-lever* control of speed and direction alone will add many extra yards to your daily production. See your nearby Allis-Chalmers dealer soon . . . he has a full line of TRACTOLOADERS to show you — two- and four-wheel drive.

*TRACTOLOADER is a registered Tractomotive trademark.

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Misalignment of tire shown by two views only 90 deg. apart on same tire; rollers' path has moved from one side to other

Kiln tires *continued from page 128*

across its chairs as the axial load is exerted against it, causing heavy wearing of the chairs and inside surface of the tire.

If the kiln weight equals W tons, and the slope is 3.5 percent, the inclined thrust equals .035W tons. If there are N tires, and D is the outside diameter, the torque tending to twist a tire on the chairs is $\frac{.035W \cdot D}{N}$ tons-feet. The dead load on a tire is $\frac{W}{N}$ tons, and if the width of a tire is "w" feet, the torque resisting a twisting of the tire, and therefore acting to keep profiles straight is, $\frac{W \cdot w}{N \cdot 2}$ equals 1.7 $\left(\frac{.035 \cdot W \cdot D}{N}\right)$ whence, "w" must be not less than $\frac{D}{8}$. Tires have been seen with proportions ranging from $\frac{D}{5}$ to $\frac{D}{15}$.

The "rolling trace" of a tire. The thrust tire should be a tight fit on its chairs, when kiln is hot. A good method of fitting a tire is to machine the inside diameter so that it has the necessary clearance over the chairs when cold. When the kiln is operating this clearance should just vanish, and the tire will cease to lag behind the shell by a small amount each revolution. However, at the two zones of the shell where the temperature may become high, the burning-zone and the end of the chain section, the shell is not likely to maintain such a matching diameter for very long, and an initial operating clearance is advisable.

The condition of brickwork under a tire must be maintained very carefully, to avoid an overheated shell being crushed inward by the tire, and creating a large clearance, tire to chairs. Assuming no tire weave and no roller skew with those tires that do not rotate relative to the shell, continued rotation of the kiln will produce a bright trace around the surface made by the rollers which carry the tire.

If the tire were now given a weave, each roller would create the same rolling trace and this would follow the weave of the tire producing a trace that moved from side to side once per revolution of the kiln.

But with both the rollers skewed on their base plates, and the tire weaving, the patterns from the rollers do not coincide, for, even though the amounts of skew be identical, relative to the kiln axis these skews are quite different. In one case the upper end of the roller axis moves into the tire surface as skew is added, but with the other roller it is the lower end.

The weave of the tire then produces two traces which possess a more or less sinusoidal shape, and these will overlap producing a pattern that will show two areas of contact near the lower edge of the tire and two near the upper edge. For the

Please turn to page 132



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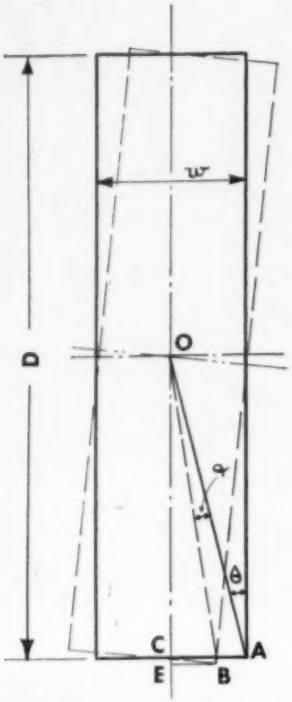


Figure 1. Skewed tire drawing is used to find movement of shell axis

TABLE A

MOVEMENT OF SHELL AXIS

β deg.	Inches of Lateral Displacement	β deg.	Inches of Lateral Displacement
0	.0087 Left	180	.0087 Left
30	0	210	0
60	.0087 Right	240	.0087 Right
90	.0050 Right	270	.0050 Right
120	0	300	0
150	.0050 Left	330	.0050 Left
180	.0087 Left	360	.0087 Left

β deg.	Inches of Vertical Displacement	β deg.	Inches of Vertical Displacement
0	.0050	180	.0050
30	.0058	210	.0058
60	.0050	240	.0050
90	.0087	270	.0087
120	.0100	300	.0100
150	.0087	330	.0087
180	.0050	360	.0050

Calculated displacements of shell; tire weave of .140 in., $\frac{D}{w} = 7$

Kiln tires *continued from page 130*

traces from the rollers are out of phase by the angle subtended by the rollers at the kiln axis, which is approximately 60 degrees. Conversely, a double pattern of this type indicates that the tire is not rotating on the chairs, that the tire has a definite weave, and that both rollers are skew.

Movement of shell axis. A second effect of the weave of a tire is that this motion will cause the axis of the shell to be moved vertically and sideways. It is computed so that it may be compared with the accuracy with which the precise centerline would have been set out in the field.

The author would mention that whereas the roller axes are fixed, the tire axis is supported by the rollers, and any variation in curvature of tire at the points of contact with the rollers will produce a radial variation in position of tire axis. A tire does not rotate about its axis, but a tire and its axis rotate about a line through the geometric center of the tire that is parallel to the shell.

Since the tire is skewed it weaves, and the shape that is rotating on rollers is not a circle but an oval, the radial variation being due to the weave of the tire.

Referring to Fig. 1, $N = \frac{D}{w}$, and $\tan\theta = \frac{w}{D} = \frac{1}{N}$

To introduce the factor of tire rotation, take the orientation where tire weave at the roller is nil, as the zero position. Then the weave from mid-position after a kiln rotation of β degrees is,

$$\frac{\text{Total weave} \cdot \sin\beta,}{2}$$

and the corresponding radial lift

$$\frac{\text{Total weave} \cdot \sin\beta}{2N}$$

Using a total weave of .140 in., and proportions N=7, produces table A.

Horizontal displacements are always towards the other roller whereas vertical displacements are always upward. With a broad tire that weaves 3/16 in. or more, these displacements will be considerably larger and would be observable in the field, and they will certainly explain some anomalies that may be encountered during erection.

"Corrugations" in surfaces. Most readers have observed striations on the surfaces of tires and rollers which form a series of straight lines of regular pitch parallel to the axis of tire or roller. The lines may exist for only a few minutes or may remain visible for several weeks.

If the factor causing development of these corrugations is not removed, the pattern will steadily become more pronounced until the depth of the

Please turn to page 134



Easiest blasting method known . . . just pour oil-soaked Spencer N-IV Ammonium Nitrate into drill hole and detonate with ⅜-inch cord.

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300' 50-grain cord	9.30
54 Gals. No. 2 Diesel fuel	7.02
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Roller corrugations caused by variations in kiln speed

Kiln tires *continued from page 132*

hollows is so great that it can be measured quite easily with feelers.

The accompanying photo shows a pattern so deep that roller rotation was irregular, for the tire could be seen rolling into and climbing out of the hollows. The roller corrugations were .003 in. deep, while the pattern on the tire measured approximately .001 in. Corrugations appeared on at least one tire assembly of every kiln, the pattern always appearing on the assembly nearest to the spur ring. With a long kiln, carried by seven tires, the markings have also been seen on the assemblies on either side of the central tire.

The pitch of the striations may vary, for they are due to a resonance, which requires a certain frequency, and so the pitch would vary with kiln speed. With the assembly shown in the photograph the pattern was in phase with the engagement of teeth in the final pinion-girth ring drive, and developed with one particular kiln speed.

Corrugations cannot develop unless there is some cyclic irregularity in kiln rotation, and probably a torsional oscillation in the shell. With another kiln, the frequency of the hunting was 125 per min., and developed both when the kiln was turning at 70 rph. (and the frequency then corresponded to the engagement of final pinion teeth) and when the auxiliary drive was operating, and turning the kiln at 5.80 rph.

A suitable steel for tires and rollers possesses a B_H value of from 200 to 230, and because of this corrugations may be treated as plastic deformations. A B_H value of 220 kilograms per sq. mm. equals 140 tons per sq. in., so the C_H value is 92 tons per sq. in. A definite time interval is used for hardness tests, for the plastic flow shows a hysteresis; thirty seconds is used for one B_H series. A group of readings was taken and the value using two seconds was 98 percent of the 30-sec. figure.

The depth of the test indentation for which B_H (3000·10·30) equals 220 is .0169 in.; the distance that a body falls freely in .01 sec. is .0192 in. With a tire surface moving at 36.2 fpm., the travel in .01 sec. is .072 in.

If the load on a roller is 100 tons, the contact area will be 100/92 (the above C_H value) or 1.08 sq. in. With a roller 24 in. wide the contact area may be 15 in. long, and thus the width of a rectangular zone would be .072 in., and would be traversed in .01 sec. This zone would have a geometrical arc height of .000027 in. for a roller 4 ft. diam., and be .000008 in. for a tire 14 ft. diam.

These dimensions have been expressed in millionths quite intentionally, for surface finish is measured in these units. The R.M.S. index of the highspot pattern of the profile of a tire or roller has a definite bearing on the matters of tire slide and corrugations. It is interesting to recall that the R.M.S. indexes of various grades of surface finish are as follows:

Coarse turning—1000; fine turning—200; fine grinding—50; lapping—20; super-finishing—5.

When the striations are first visible they probably indicate a slight variation in highspot pattern, and the subgrade is not affected.

A micrograph of the circumferential cross-section of the surface of a tire clearly showed how the crystal structure of the steel had been affected for a depth of about .020 in.; near the surface (for a depth of .005 in.) the structure was parallel to the surface and had been heavily compacted.

It will be remembered that when two bodies are pressed together there is a "piling-up" around the contact zone. As a tire and roller rotate, this piling-up will be increased in front of the contact zone and decreased behind it. Any fluctuation in rotational speed will produce a variation in the penetration, and so in the piling-up. Such a variation will cause an irregularity in reflective power and will appear as a striation, the change in highspot index being only one or two micro-inches.

As the bodies rotate, the motion of the piling-up can be thought of as a stationary wave. It is possible that, if the material be too soft, the depth of the indentation and piling-up will be such that a slow edge leakage of material will occur, creating a burr on both edges of the tire. The rate of tire slide is affected by the surface finish; conversely, surface finish would be affected by tire slide, or skew. The development of a rough or mottled surface may be due to the roller possessing too great an amount of skew. Mottling may also be caused by grit being continually rolled into the surfaces, but the appearance is quite different.

Please turn to page 145



Crushing Specification Stone?





Bonus capacity, superior quality with Hydrocone Crushers

YOU can gain extra hours of production each time you change a setting in the *Hydrocone* crusher. Just flip a switch, and in *less than a minute* the *Hydroset* mechanism raises or lowers the crushing cone for precise control of product size. Equally important, you get superior quality stone to meet rigid specifications. Crushing chamber design and choice of eccentric throws assure uniform cubical characteristics and even distribution in all mesh sizes.

Adjusts for wear, clears tramp iron and releases jams

"One-man, one-minute" operation also applies to compensating for wear on mantle and concave, and emergency unloading — just flip the switch to raise the mainshaft. In addition, you get protection against tramp iron or other uncrushable materials with an automatic reset in the hydraulic system.

To get all the details on the fastest and most efficient crusher operation, ask your A-C representative for Bulletin 07B7145B. Or write Allis-Chalmers, Industrial Equipment Division, Milwaukee 1, Wisconsin.

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Talk of producer problems continued between sessions. Here Harry Barney of Barney & Dickinson, Vestal, N.Y.; David Hollenbeck, A. W. Hollenbeck, Central Valley, N.Y.; John Hopkins of Albany Gravel, Albany, N.Y.; and Bill Berry, Smith Engineering Works, New York City, confer. The fines recovery problem aroused a great deal of comment

How do you clean tailings ponds?

Empire State sand & gravel producers answer this and problem of gravel truck spillage

EMPIRE STATE SAND AND GRAVEL PRODUCERS were treated to spirited discussions on waste fines disposal, lightweight aggregates and a movie on one firm's public relations program at their annual fall conference.

The Empire State Sand, Gravel and Ready Mix Association meeting was held October 16 at the Concord Hotel, Kiamesha Lake, N.Y.

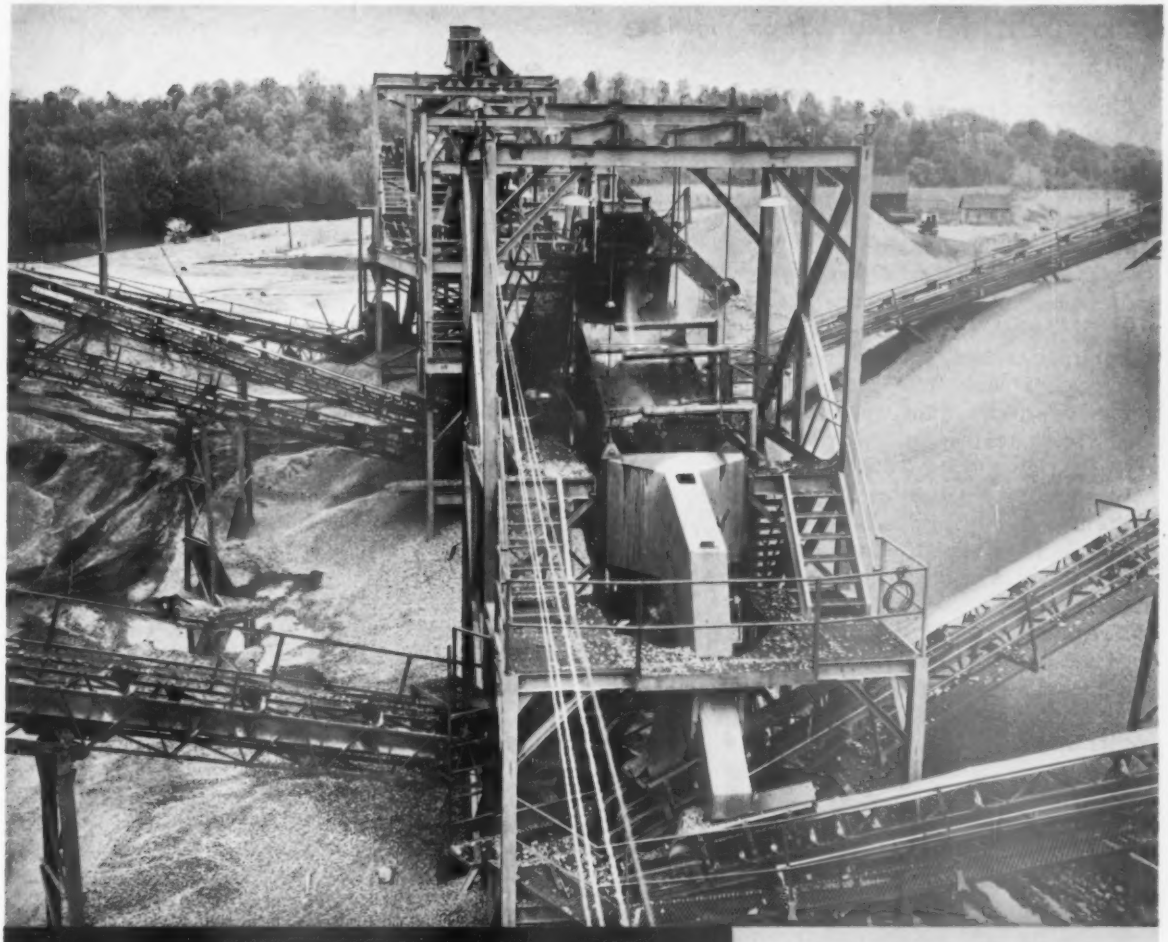
A panel discussion on waste fines disposal and gravel spillage from delivery trucks was the final item on the aggregate session agenda, but perhaps the best.

The panel was led by Hugh McCracken, and included producers Eugene DeWitt of B. R. DeWitt, Inc., Pavilion; R. T. Franklin of Central Materials Co., Owego; Edward P. Kolb, Windsor Building Supplies Co., Newburgh; and Paul E. Robinson of Jay W. Robinson & Son, Auburn.

The waste-water fines recovery problem clearly interested the New Yorkers, for many told of their experience with it. Paul Robinson said he wanted to recover fines because today a higher percentage of fines is specified for asphalt mixes. Others noted that stream pollution from plant effluent is a problem, and public opinion dictates that producers clean up their plant waste water. The cost of taking tons of fines from a tailings pond several times a year is one reason for finding a way to clean the water before it gets to the pond. The producers agreed that liquid cyclones could do a good job of separating minus-100 mesh fines from tailings at a reasonable cost.

Spewing out ideas as if in a brainstorming session, the producers came up with many possible answers to the spillage problem with gravel delivery trucks.

Please turn to page 138



Rubber arteries serve the heart of this aggregate plant

Acme-Hamilton conveyor belting, nearly a mile of it on 16 Barber-Greene conveyors, carries aggregate from the pit to this washing, crushing and screening plant, stockpiles the different products, then loads them on barges. 4 men operate the entire plant! Impossible without dependable, trouble-free conveyors and Acme-Hamilton belting.

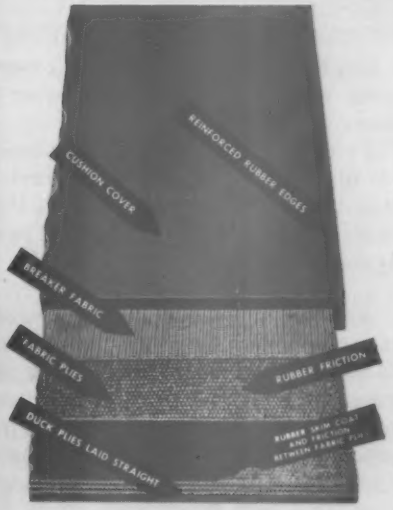
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Breaker Fabric. Optional double cord fabric acts as second cushion, increases cover adhesion.

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Empire State *continued from page 136*

Here are some of the ideas: 1. Weigh each load so none gets more than ordered (most spillage results from overloading). There was no argument here—all who've tried the plan like it. 2. State producers could write their own no-overload code; otherwise the state may do it for them, and come up with a tougher code. 3. Try higher side boards or tarpaulins. 4. Much spillage is from trucks operated by local, county or state governments, or by contract haulers. The truckers' associations and overseers of public road building may be a help here—they won't want word to get around that their trucks are doing sloppy work.

Lightweight aggregates are offering new competition to sand and gravel. Thus Joseph Shideler's talk on lightweight structural concrete and lightweight aggregates caught the immediate attention of producers.

Mr. Shideler, of Portland Cement Association, used slides to emphasize these points:

Lightweight shale and clay aggregates for structural concrete are being made in about 30 U. S. plants with rotary kilns and 20 plants with sintering grates. Expanded blast furnace slag aggregate is also available.

Each of seven lightweight aggregates tested by Mr. Shideler made structural grade concrete, and weighed between 90 and 110 lb. per cu. ft. This is only two-thirds the weight of sand and gravel concrete. Its light weight and superior insulating qualities are the principal reasons why lightweight structural concrete is gaining in use.

But most of the lightweight concretes required more cement to get compressive and flexural strength equal to sand and gravel concrete. Mr. Shideler noted that drying shrinkage and creep are higher with lightweight concrete, and warned that the structural properties of the lightweight aggregates varied from sample to sample, even for aggregate from the same plant.

A movie entitled "Rumor" showed how American Aggregates Corp. is able to win communities to its side of the zoning question. American Aggregates is foresighted enough to undertake land reclamation in its worked out pits. In fact this big producer has a reclamation plan for each new pit from the time it begins operations. Thus attractive lakes and choice real estate are the result when the pit is worked out and the plant moved. Throughout the movie American Aggregates pointed out the value of concrete aggregates to a community.

Donald Rae of Laverack and Haines, Inc., managers of a workmen's compensation plant for New York state aggregate producers, discussed the plan. He explained progress made in New York state to cut awards in hearing loss cases. A six month waiting period (to eliminate payment for temporary loss) and hearing tests given upon employment (to stop payment for loss incurred earlier) have cut awards drastically, he said.

The ready mix producers' spot on the program came in the afternoon. In what many considered to be the top talk of the afternoon, Ad Blondeel of Ernil Prestressed Co., Hillsdale, N.J., described the pros and cons of the ready mix producer entering the prestressed business.

He said that prestress can be very profitable since the existing batching plant can be used during off-hours and in winter. Other reasons are that prestress can be sold far outside the small ready mix marketing radius, and repeat business is a money maker, since the customer has already been sold on the value of prestressed products.

Arguments against entering the prestressing business include the capital requirements of perhaps $500,000. Secondly, the architects and engineers who specify the building materials are often not familiar with prestress, and thus shy away from it. This is perhaps the biggest hurdle this young industry must overcome, Mr. Blondeel said. A recent survey, he pointed out, showed that only 100 of 2,100 engineers in New Jersey have a working knowledge of prestress. END

Slag meet *continued from page 114*

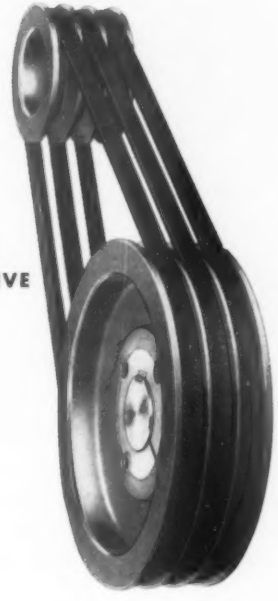
effective movie produced by the ARBA. This was "Engineering Your Future," directed toward high school and college students in an effort to turn more of them toward the engineering professions. J. E. Wiley, Managing Director, M. & S. Div., explained the continuing need for more engineering and scientific personnel to keep the highway programs of the future rolling ahead. He reported that salaries for highway engineers in practically all grades had been increased during the past two years—very important to keep the status and incomes of highway engineers in line with private practice.

Charles W. Ireland of Vulcan Materials Co. was elected president of the National Slag Association, which now has the largest membership in its history—32 companies with 64 plants. Mr. Ireland will be assisted by Harris N. Snyder of The Buffalo Slag Co., Inc., new vice president. END

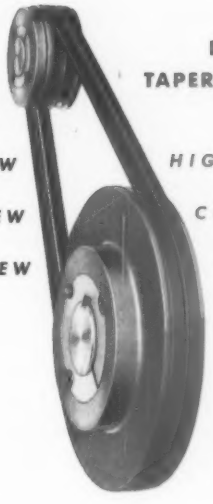
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	Number	Size	O.D. Driver	O.D. Driven	Width				Per hp	Per Drive
CONVENTIONAL TAPER-LOCK DRIVE	3	A42S	4.15"	8.95"	2½"	12.3"	4.62	24.7	$5.91	$27.38
DYNA-V TAPER-LOCK DRIVE	2	3V400	3.35"	8.00"	1⅜"	10.8"	5.0	18.0	$4.50	$22.50
% SAVING *Savings vary with different sized drives*			**19%**	**10%**	**56%**	**12%**	+	**27%**	**23.8%**	**17.8%**

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Rock forecast *continued from page 87*

of course, is the United Cement, Lime and Gypsum Workers International Union. Here's what a representative of this organization had to say about how things look through the eyes of the union in the three industries in which they operate:

"Much of the outlook in the cement, lime, gypsum and allied industries, whose workers we represent, is conditioned by activities in the construction field—especially highway construction and housing. The level of spending on roads and highways should register about a 15 percent increase over 1958 with about four-fifths of the expenditures being used for actual construction.

"For the cement industry, this will mean increased sales of from 5 to 10 percent just for highway use. Over 90 million barrels of cement will be needed for highway construction in 1959, when the industry's production should hit between 310 and 315 million barrels—assuming there will be no unforeseen downward dip in the economy or major strikes to substantially affect production. Unit labor costs in the industry should remain steady due to increased productivity, triggered by the construction of new automated plants as well as improved plant operations and expansion. Higher productivity and a stable production force would tend to decrease the industry's unit labor costs making it feasible for most companies to absorb any increased labor costs without raising prices in 1959. Labor costs as a percent of sales have been on the decrease in the cement industry over the past ten years; all indications are that this trend will continue in 1959.

"As far as can be predicted, the lime industry will produce only about 10 million tons (open-market and captive). Future attention to problems in the industry is centered around dust control methods and quarry blasting techniques . . . as for gypsum, demand seems to be on the ascent due to unseasonably high housing construction. Production in 1959 should follow the long-trend upward movement of the industry and show slight output improvement over 1958. Also an increase in cement production should naturally up the demand for gypsum as a cement retarder."

Summing up: Officials of rock industry trade associations, labor unions and suppliers are in accord on one thing at least: a solid and generally satisfactory outlook for all of the rock industries. Sand and gravel and crushed stone are looking to public works—which in turn is looking up. The lime industry will make a spirited comeback after a rough year in 1958. The cement industry will continue to strengthen and will use some of the excess capacity it suddenly found on its hands last year.

END

Bright outlook *continued from page 91*

reaching for, and hoping to obtain, a minimum of this many homes annually.

Among the larger housing units, which are particularly heavy users of building products, apartments are expected by the board to be built in larger amounts during 1959 than in any year since 1950, when FHA's Section 608 was a major stimulating influence. This will be a huge market in 1959, approximating $2 billion. The strong underlying trend in this field was maintained even in the recession of early 1958. The number of single-family homes built declined 14 percent from 1956 to 1957, but the multi-family buildings rose 45 percent. Similarly, in 1958, while single-family homes went up 6 percent, the multi-family buildings increased 14 percent.

The board makes note of the expanding market of the nation. As the numbers of people grow—and their incomes rise—so, too, does the market for construction and for the output of the rock products industries. The total population of the United States now approximates 175 million. That is about three million higher than at this time last year, and it is the equivalent of adding another Boston, Cleveland and St. Louis to the vast market that is the United States. The steady growth over the years is indicated in the fact that since the official 1950 census count of 151,132,000 people, the total has jumped almost 16 percent, or about 24,000,000!

Here's how we arrived at our estimates of spending by the rock products industries during the next 12 months: Starting with the 1954 census data as a base, we cleared those data with our 309-man board. This board gave its estimates of the 1958 percentage increases over 1954 figures and also estimates of 1959 potential percentage increases over 1958. The consensus of estimates was then applied to the census-base 1954 figures. The tabulation of figures carried in this study emerged, the only estimates of their kind available anywhere—accomplished exclusively for ROCK PRODUCTS magazine.

Estimated spending for rock products industries in 1958 and 1959 (in millions of dollars)

	1958	1959
Power generating equipment	$38.4	$42.6
Conveying equipment	20.1	22.0
Drilling, crushing and grading equipment	48.6	52.9
Power loading and excavating equipment	35.9	40.1
Trucking equipment	18.3	19.8
Washing and beneficiating equipment	31.7	34.2
New plant	58.1	60.3
Miscellaneous supplies, equipment and expenditures	33.0	36.7
Totals	284.1	308.6

END

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The FALK Spacer Coupling is specially designed for quick installation or removal *without disturbing the driving or driven unit.* This feature can save you up to 50% in disconnect-reconnect time when critical equipment—a process pump, for example—needs repair or replacement.

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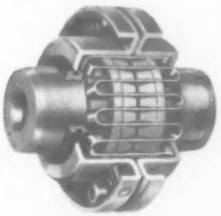
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Plibrico Lining	Ordinary Lining
6 pieces, steel	9 pieces, steel
10 anchors	18 support castings
1 piece refractory	58 pieces, tile
17 pieces . . . TOTAL	. . . 85 pieces

Simplicity applies to all Plibrico linings. See how you can benefit from Plibrico construction by writing today for our catalog covering linings for calcining, drying, and processing furnaces.

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Phosphate *continued from page 123*

follows conventional practice in the area, using single-deck vibrating screens; oversize goes to a hammermill and through material is recirculated. Two large log washers are in service. The aim of primary separation is to get a plus 20-mesh product that is binned for car shipment; a minus 20, plus 65-mesh coarse flotation feed; a minus "48-mesh" fine flotation feed and a slime that is sent to a large thickener so water can be reclaimed. The underflow from this thickener is pumped to the tailing pond.

Rake classifiers, some with bowls, are used for some separation, and 48-in.-diam. liquid cyclones are used to a possibly greater extent than in any other plant in the field. Ten six-spigot sand sizers are also used for separation.

The coarse feed to the float cells is conditioned in a rotary or barrel-type conditioner. The fine feed is conditioned in two banks of four-cell agitator-type units. The concentrates from both floats (fine and coarse) are recombined for the amine float treatment; after passing through the four-cell acid agitator the pulp is rinsed by passing through two 48-in. liquid cyclones. These are mounted at an angle of about 45 deg. rather than in the more conventional vertical position.

Air cells made by the company are used to a considerable extent. The cell almost spans the building; over it is a large-diameter header from which many parallel ¾-in. pipes extend down into the pulp. Low pressure air is used. The cells have no moving parts and are excellent roughers. Conventional MS cells are used for the amine float. Tailings from the roughers as well as the final concentrates are automatically sampled.

MAJOR EQUIPMENT USED AT AMERICAN CYANAMID CO., ORANGE PARK, FLA.

In the mine:	
Walking draglines, 175-ft. boom (2)	Bucyrus-Erie Co.
Buckets, 17 cu. yd. (2)	Electric Steel Foundry Co.
Guns (6)	Georgia Iron Works; Universal Nozzle Co.
Dredge pumps, 16 in.	Georgia Iron Works; Maddox Foundry and Machine Co.
In the plant:	
Pumps	Pettibone-Mulliken Corp.
Liquid cyclones, 4-ft. diam. (12)	Dorr-Oliver, Inc.
Samplers (2)	Gallagher Co.
Log washers (2)	McLanahan and Stone Corp.
Screens	The W. S. Tyler Co.
Deep well pumps	Layne & Bowler, Inc.
Fresh water pumps	Allis-Chalmers Mfg. Co.
Cleaner cells	Mineral Separation Co. of North America
Blower (for air cells)	American Blower Co.
Pumps	Georgia Iron Works
Quadrant rakes, 16 ft., 27-ft. bowls (2)	Dorr-Oliver, Inc.
Quadrant rakes, 12 ft. (2)	
Duplex rake, 8 ft.	
Pocket sizers, 6 ft. (10)	
Thickener	

END

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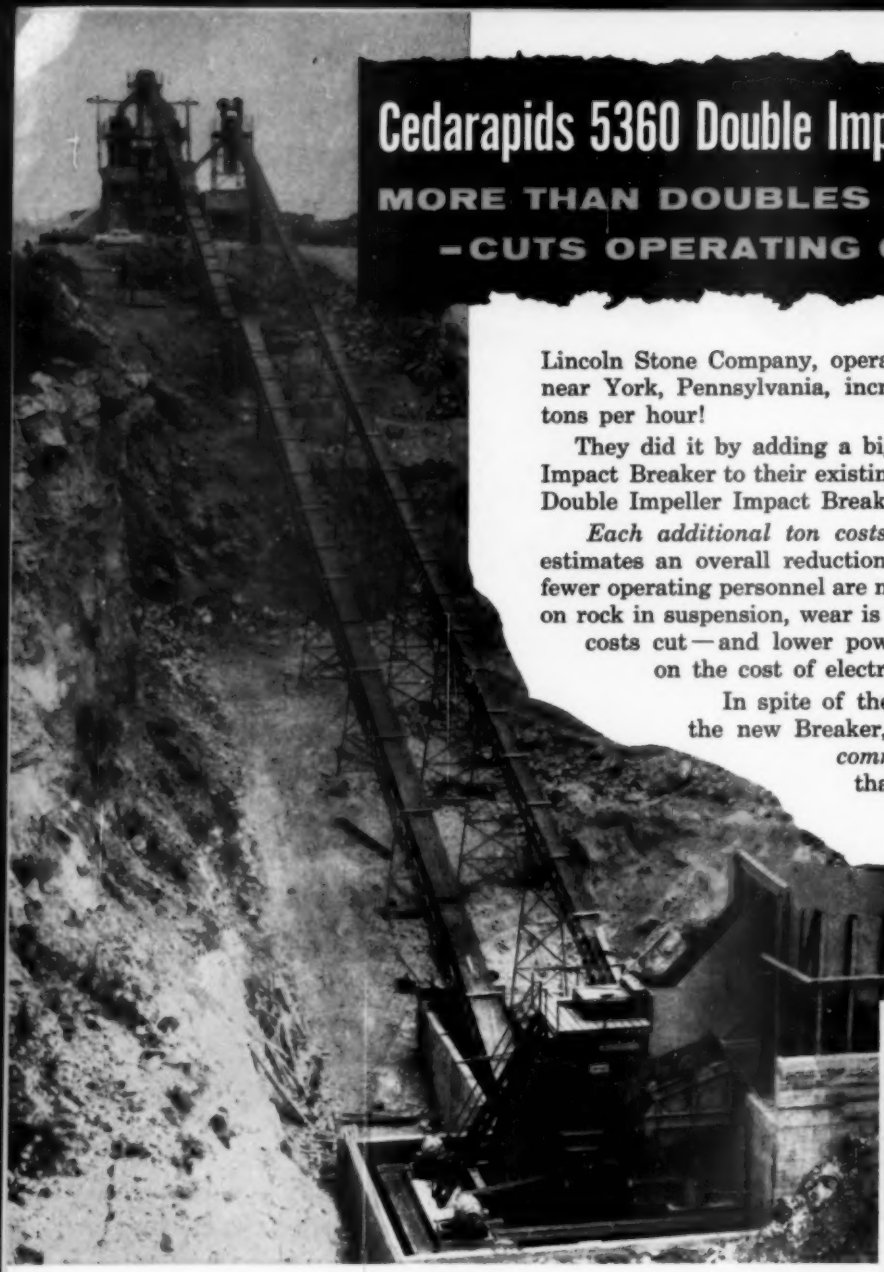
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Lincoln Stone Company, operating this 100% Cedarapids plant near York, Pennsylvania, increased capacity from 400 to 1000 tons per hour!

They did it by adding a big Cedarapids 5360 Double Impeller Impact Breaker to their existing plant, which consisted of a 4350 Double Impeller Impact Breaker followed by two Hammermills.

Each additional ton costs less to produce! Lincoln Stone estimates an overall reduction in operating expenses of 25% — fewer operating personnel are needed — with 50% of rock breaking on rock in suspension, wear is sharply reduced and maintenance costs cut — and lower power consumption saves 7¢ per ton on the cost of electricity.

In spite of the increased capital investment for the new Breaker, *Lincoln Stone can now produce commercial stone for at least ⅓ less* than local competition using different make crushers!

1000 Tons Per Hour? —1250? —1500?

"We can't feed this Breaker fast enough to find out what its capacity really is," says owner WALTER SIPE

Although Lincoln Stone doesn't know the actual capacity of their big new Breaker (it has been averaging between 900 and 1000 tph, 85% minus 5" stone), *they do know that their Cedarapids engineered plant is production-balanced* for big tonnages. Each Cedarapids unit—Breakers, Vibrating Grizzly, Hammermills, Screens, Conveyors—is in proper balance with the others in both size and capacity.

You can profit by the experiences of other Cedarapids owners. Your Cedarapids Dealer is well-qualified to help you combine expert engineering with the most productive equipment for your job. Call him today!



Production-balanced with the other units in the plant, two Cedarapids 5′ x 16′ triple deck Horizontal Vibrating Screens easily handle the big tonnages from the main plant conveyor.

Cedarapids Built by IOWA

IOWA MANUFACTURING COMPANY

Cedar Rapids, Iowa, U.S.A.

Kiln tires *continued from page 134*

The bevel effect. We have assumed that surfaces are in good condition when the "helix effect" controls the whole matter of thrust. But if surfaces are worn, and are conical, rather than cylindrical, the lines of contact may be a long way from being parallel to kiln axis. Heavy axial pressure may be created, analogous to the forces involved with bevel gearing, and this "bevel effect" can become comparable with the "helix effect." For example, if the line of contact with a roller were horizontal, this part of the kiln's inclined thrust would vanish.

Recent laboratory work by the author has shown that axial slide is controlled by the shear-stress strain behavior of the material. It is a purely elastic phenomenon when axial loading is less than six percent. This accounts for the very slow loss of steel from a tire or roller on a seven-tire kiln.

Several leading institutions in the northern hemisphere indicated that no work had been carried out on the problem of axial slide of metal surfaces. It is realized that there may be many viewpoints. The author will appreciate discussion by correspondence with interested parties. Assistance has been given by Mr. E. M. Schroder, Managing Director for Adelaide Cement Co., Ltd., through many suggestions made regarding method of presentation of the article. END

Safety *continued from page 98*

can Cement Company, discussed a booklet that tells what to do and what not to do. He urged that everyone be given a chance to read the booklet soon. As he expressed it: "You won't have time to sit down beside a dying man and read a book."

The most promising area for cutting accidents is that of getting a closer relationship between the supervisor and equipment operators, said W. Irwin Gill, president of Gill Blast Hole Drilling Co., Inc. He discussed the importance of preventive maintenance to safe drilling practices, pointing out that surveys showed maintenance to be poor generally. Safer drilling can be obtained through "preventive" thinking by management, he said.

Cement companies are holding up the quarrying industries in safety rates, according to John C. Machisak, Chief, Branch of Accident Analysis, Federal Bureau of Mines. He traced safety experience of each industry in the quarrying group from 1952 to 1957. The record has been good in that period, but preliminary figures show an upturn in accidents for 1957.

The cement industry has turned in a good record for 16 years, and its rates are only about 25

Please turn to page 146

EFFICIENT - LOW-COST CONVEYING

with EHRSAM **DRACON**

EHRSAM pioneered the use of *Dracon* Conveyor in screw conveyor box and now offers their improved *Dracon* that has been thoroughly field-tested. If you want the best in efficient, low-cost conveying of dry, bulky, free-flowing materials; get *Dracon*. Hundreds of satisfied users attest to the efficiency and dependability of *Dracon*. It is the one proven conveyor of this type that is available today.

EHRSAM engineers will gladly assist you to solve your conveying problems with *Dracon*. *Wire, call, or write* EHRSAM *today!*



The J. B. Ehrsam and Sons Mfg. Co.
Enterprise, Kansas

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East Coast: The Wilks-Bermel Company in Lancaster, New York

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Safety *continued from page 145*

percent as high as the average for all the stone industries.

A major accomplishment of the CQ&MA Section this year is a revision of forms used in reporting in the national safety competition. Mr. Fleming was active in taking suggestions for changes to Mr. Machisak, who cooperated in setting up the new forms for the Bureau of Mines. J. R. Boyd, National Crushed Stone Association, was given credit for arranging the meetings. The new forms will be effective January 1, 1959.

Importance of the employes' attitude toward safety was fully covered by R. S. B. Holmes, assistant director of safety, U. S. Steel Corp. The company's most recent addition to its safety program is called "Operation—Attitude."

According to Mr. Holmes, a major requisite for the plan is to give more attention to employes as individuals. Important also, he said, is to base safe work procedures on management know-how and practical worker knowledge. Such procedures in the plan were worked out on the conference basis. Foremen were trained as conference leaders, who were responsible for working the conference reports into safe job procedures. The result: company foremen say that Operation—Attitude is one of the most effective tools developed in the company program. **END**

Reclaim tunnel *continued from page 124*

Raw material for the plant comes from the 87-acre deposit of sand and gravel adjoining the plant. A drag scraper system works a high bank to bring the raw aggregates to the feed hopper over the primary crusher. A bulldozer supplements the scraper by bringing raw material to the hopper, also.

Pit run of material is dry and clean, and there is no clay problem. About 35 percent of the material must be crushed and five gyratory crushers are arranged to do this job. All material can be either by-passed around or can be recycled through any one of the four crushers following the primary crusher. All screening is done dry right up to the final washing and wet screening operation.

Sand screws and a six-spigot water scalper are used for sand classification and dewatering. Water is used at the rate of about 1,600 gpm. and is supplied from a deep well directly under the washing plant. Waste water from washing is sent to a settling pond where the water seeps back to the water table through the permeable gravel strata.

Please turn to page 148



"Our equipment keeps on rolling—

We use Colmonoy No. 2, the Best Hard-Facing!"

You get top abrasion resistance and easy welding with low-cost Colmonoy No. 2 hard-facing electrodes. Use them on tractor treads, dipper teeth, ditcher teeth, truck beds, dragline buckets, any steel or manganese steel part.

Excellent arc stability and good flowing qualities make these low hydrogen AC-DC electrodes a cinch to apply. A Colmonoy No. 2 deposit has a Rockwell C hardness of 50 to 60.

Write today for more information about Colmonoy No. 2 and the rest of the Colmonoy family of hard-facing alloys.

HARD-FACING ALLOYS

19345 JOHN R STREET **WALL COLMONOY** DETROIT 3, MICHIGAN

CORPORATION

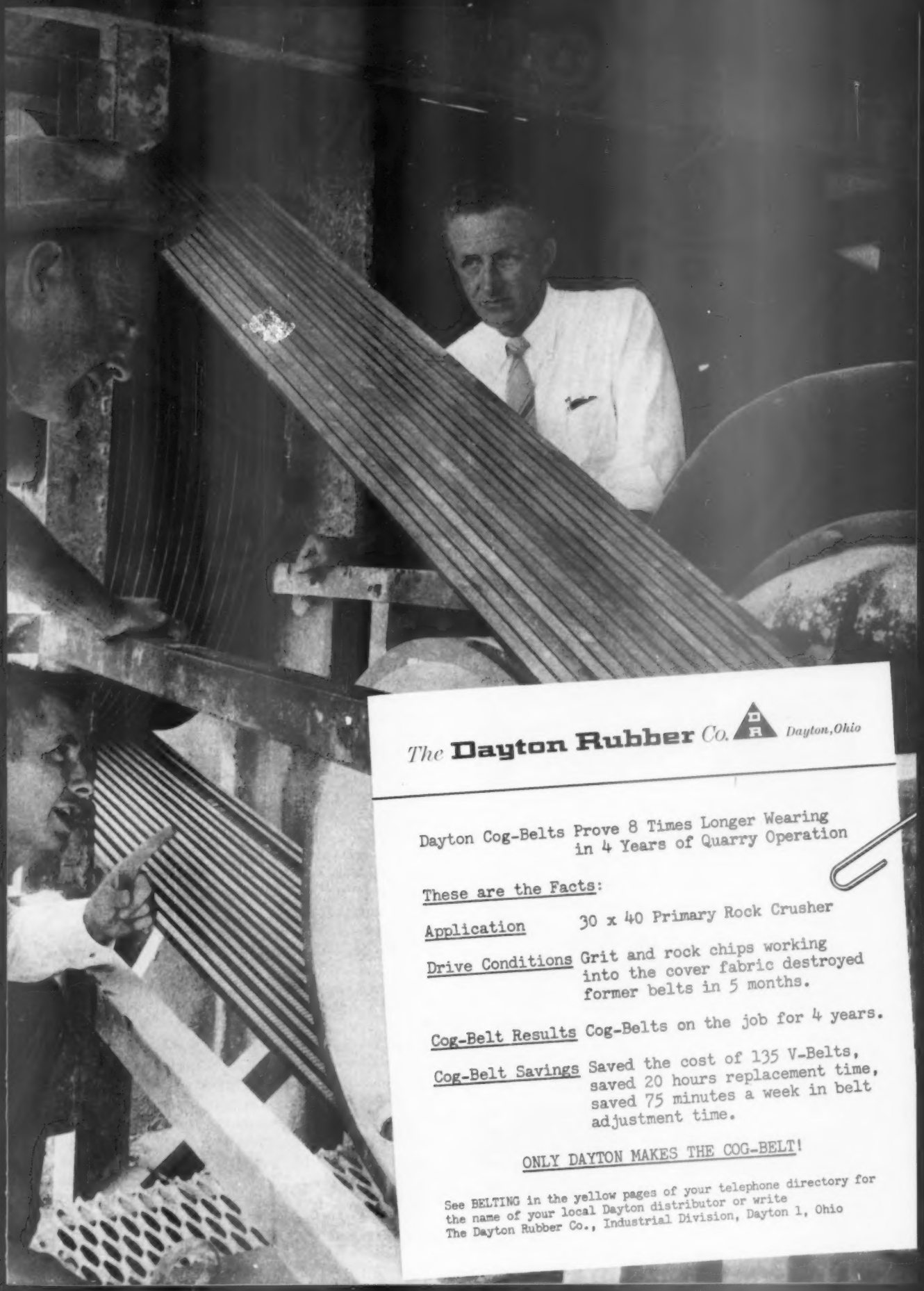
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Available in 1/8, 5/32, 3/16, and 1/4-inch diameters, packed in 10-lb. sealed metal containers.



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The **Dayton Rubber** *Co.* D R *Dayton, Ohio*

Dayton Cog-Belts Prove 8 Times Longer Wearing in 4 Years of Quarry Operation

These are the Facts:

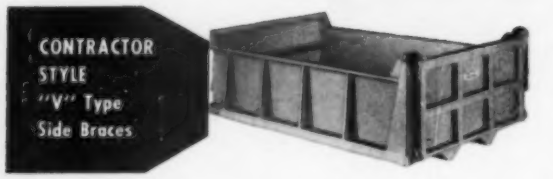
Application	30 x 40 Primary Rock Crusher
Drive Conditions	Grit and rock chips working into the cover fabric destroyed former belts in 5 months.
Cog-Belt Results	Cog-Belts on the job for 4 years.
Cog-Belt Savings	Saved the cost of 135 V-Belts, saved 20 hours replacement time, saved 75 minutes a week in belt adjustment time.

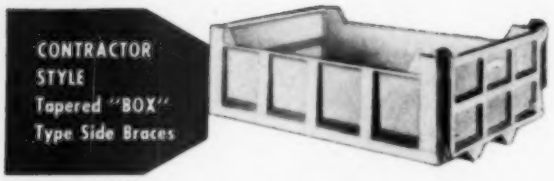
ONLY DAYTON MAKES THE COG-BELT!

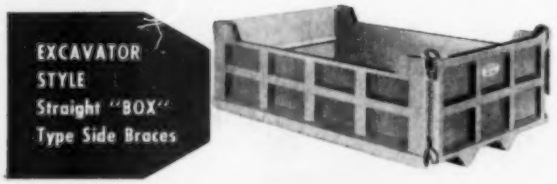
See BELTING in the yellow pages of your telephone directory for the name of your local Dayton distributor or write The Dayton Rubber Co., Industrial Division, Dayton 1, Ohio

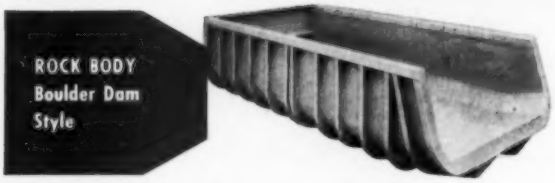
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Rugged Daybrook Dump Bodies offer the contractor-excavator-builder many exclusive advantages in design in addition to all-welded *steel* or *aluminum* fabrication by body craftsmen.

In addition to a wide selection in styles and capacities in standard designs, Daybrook will build special dump bodies to customers' requirements.

For one truck or a fleet . . . when you "team-up" long-life Daybrook Dump Bodies with conventional or telescopic type hoists on hauling-dumping operations, you have "one" responsibility . . . all Daybrook.

Write for complete line broadsides on Daybrook Dump Bodies and Hoists. Request form numbers BR-B-57 and BR-H-57.

DAYBROOK HYDRAULIC DIVISION
Young Spring & Wire Corporation
BOWLING GREEN, OHIO

DAYBROOK Speedlift® TRUCK EQUIPMENT

Nationwide Sales and Service

Reclaim tunnel

continued from page 146

Another example of Mr. Sims' inventiveness is his new concrete transit mixer which has front-end discharge. Its novel design permits the truck to be driven more easily up to the spot where the concrete is to be placed. It also means that the least possible weight is on the discharge-end wheels; this minimizes chances of an excavation wall giving way under the truck's weight.

MAJOR EQUIPMENT AT SOUTH EAST SAND & GRAVEL CO.

Drag scraper	South East Sand & Gravel Co. (Powered by International Harvester Co. diesel)
Tractor-dozer	Caterpillar Tractor Co.
Primary crusher, 9-K	Allis-Chalmers Mfg. Co.
Secondary crushers, 7½-K, 6-D	Allis-Chalmers Mfg. Co.
Final reduction crushers, 36-in. Kue-Ken, 18-in. Kue-Ken	Straub Mfg. Co.
Water scalper, 6-spigot	Eagle Iron Works
Sand dewaterers (2)	Eagle Iron Works
Screens	Pioneer Engineering; Screen Equipment Co.

END

Roadstone

continued from page 109

new vibrating screens installed in the plant will be of horizontal design, according to Mr. Dunn.

The top deck of the washing screen is usually set to make a minus ¾-in. product, but this can be changed quickly. There has been a strong and increasing demand for a ⅜ x 3/32-in. washed crushed stone. The lower deck is usually left at 3/32 in. and through-screen material is sluiced to a tailing pond.

Washed oversize is trucked back to be recycled into the system or taken to stockpiles. Washed and sized stone is taken to stockpiles on the floor of worked-out sections of the quarry, where it pile-drains until ready for shipment.

In the past, trucks were loaded with either a front-end loader or a bucket loader, depending on which machine was most available. But several county engineers came to the conclusion that material loaded with the bucket loader had better size distribution, believing that the machine churned and mixed the stone as it worked the stockpile. They insist that this machine be used, even though it takes longer to load out trucks. It is easy to comply with their orders, but Mr. Dunn wishes he had a bigger bucket loader.

Limestone fines settle rapidly in an artificial lake where the tailings from the washing plant are taken. Overflow from the lake seeps through the underlying rock formation to a nearby river, and the lake seems to maintain a uniform depth. Fresh water for the plant is pumped from a deep well that taps the river, giving a steady supply of clear water.

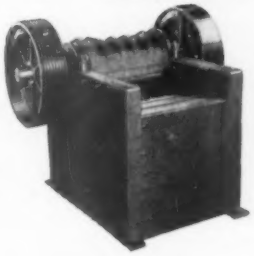
Please turn to page 150

For men who like to underbid their competitors

(and make a nice profit, too!)

JAW CRUSHERS

PIONEER overhead eccentric action offers double action crushing stroke, thus providing forced feed and greater capacity. Shaft bearings placed closer than on any other crusher. Double-walled, welded steel base reduces weight at the same time it increases strength. Reversible jaw plates. Crusher can be adjusted while in operation. Available in 12 sizes from 1016 to 4248.



TWIN ROLL CRUSHER

PIONEER design makes 100% of roll shell available as crushing surface. Shells are easily replaced without removing bearings from shaft. Driven by star gears, completely enclosed and running in oil. Available in 2416, 3018, 3024, 4022, and 5424 sizes.



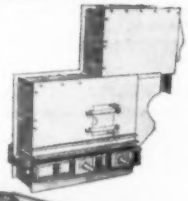
TRIPLE ROLL CRUSHER

Add a third roll and you have a triple roll crusher. This makes it possible to increase stage of reduction to as much as 6½". The Triple Roll Crusher is manufactured only by PIONEER. Available in 3018, 4022, 5424 sizes.

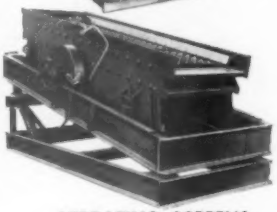


IMPACT BREAKER

The PIONEER 3648 Cuber is a multi-stage, regulated-flow impact breaker suitable for either primary or secondary crushing of relatively non-abrasive stone. Full gradation control. Capacity up to 150 tph of minus 1"; up to 350 tph of minus 3".







MESABI SCREEN

This heavy-duty vibrating screen withstands heaviest loads. Frame is 18" car channel on I-beams reinforced with 8" wide flange beams. Pans are ¾" or ½" thick. Four bearing, heavy duty shaft. Seven sizes from 4' x 10' to 6' x 14'.

VIBRATING SCREENS

PIONEER's full-circle throw gives same positive down-hill vibration at each end as in middle, thus every square inch works for you. Balanced end-for-end and top-for-bottom, to effectively confine vibration to pan. 2 and 3 deck screens in 11 sizes.





CONVEYORS

Available in 18", 24", 30", 36", and 42" widths. Easy-to-erect *pre-engineered conveyors* range in length from 30' to 120' in 5' increments. *Job-engineered conveyors* for horizontal, extra long, or other special installations are available in any length from 12' up.

PORTABLE CONVEYORS

On hydraulic cradle truck for easy portability and one-man operation. A 70' conveyor is easily raised to operating position in 9 minutes, lowered in 1 minute. Available in 18", 24", 30", 36" widths; in 40', 50', 60', 70' lengths.

APRON FEEDERS

Heavy-duty PIONEER Apron Feeders have ¼" thick, overlapping, forged steel pans carried on heavy chains supported on wide heavy duty rollers. Available with or without straight or flared sideboards. Widths 30", 36", 42", 48"; Lengths 6', 8', 10', 12', 14' and larger.



PORTABLE APRON FEEDERS

Mounted on pneumatic-tired chassis. Used in place of conveyor for feeding heavy, sharp, abrasive rock to portable primary crushing plant. Easily detached for quick job-to-job moves. Available in two sizes: 36" x 30' and 42" x 30'.



PIONEER ORO FEEDERS

The most rugged feeder made. Pans, rollers, drive sprockets and idlers cast from special high alloyed manganese steel. Pans are from 9/16" to 1" thick, depending on width of feeder. Chain links are cast as part of pan so there are no bolts or rivets to break or loosen. Available in 30", 36", 42", 48", 60", 72", 84" widths.



MECHANICAL FEEDERS

PIONEER Reciprocating Plate Feeders provide uniform flow of material to conveyors. Available in five different models.



BUZZER SCREEN

This small, compact vibrating screen fits on PIONEER Portable Conveyor and is also available with bin mounting. 3' x 6' size for production of ¾" material up to 50 tph; 4' x 8' size for production of ¾" material up to 90 tph.



PIONEER ENGINEERING also manufactures a complete line of portable Crushing, Screening, Washing, and Bituminous Mixing Plants. For further information, mail coupon or see your nearest PIONEER Distributor.

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☐ BITUMINOUS PAVERS	☐ APRON FEEDERS	☐ CONVEYORS

Name_____

Company_____

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Roadstone *continued from page 148*

The limestone formation in the quarry is worked to maintain a 50 to 55-ft. face. Blast holes are drilled with a 5-in. rotary drill that can go 30 to 35 ft. into the hard rock before it needs changing. This hard rock is in the top 20 to 25 ft. It is useful only as roadstone and is kept carefully segregated from the stone below.

The next 25 to 27 ft. is high-calcium stone, soft and friable. It is easily worked and is as suitable for building stone as it is for metallurgical stone.

MAJOR EQUIPMENT USED AT DUNN LIMESTONE CO.

Haulage trucks (4)	Euclid Div., GMC
Truck hopper	Bonded Scale & Equipment Co.
Belt feeder	Bonded Scale & Equipment Co.
Gyratory crusher, 4-ft. standard	Nordberg Mfg. Co.
Front end loader, 175A	Clark Equipment Co.
Shipping scale	Winslow Government Scale Co.
Washing plant, conveyors, bins, screens	Iowa Mfg. Co.
Bucket loader	Barber-Greene Co.

END

Janesville *continued from page 103*

he loaded the cars himself, by hand, using a wheelbarrow. "If I got up at 4 a.m. and worked all day, I could manage to load one car," he said recently.

Later, on a piece of brown wrapping paper, he sketched plans for a loading rig. This became the company's first loader, a machine that scraped sand and gravel from a bank and lifted it in an elevator to rail cars. The rig's loading record was nine cars a day, and it was used for many years. Cranes were added in the 1920s. By the time J. R. Jensen and his brother retired two years ago, their "little piece of land" had become one of the biggest sand and gravel businesses in the state. The present company name was adopted in 1910.

Janesville's clean aggregates command a premium price from concrete products producers and concrete contractors in distant Chicago and Milwaukee. Product quality has been the main factor in the company's retention of these traditional markets in the face of soaring rail freight rates. Just about the entire output of the deposit is still shipped by rail, and Dr. Ellis E. Jensen, president and general manager, has forcefully opposed what he considers to be discriminatory freight rates (see ROCK PRODUCTS, July, 1958, page 74).

MAJOR EQUIPMENT USED BY JANESVILLE SAND & GRAVEL CO.

Clamshell, 1¾ cu. yd.	Northwest Engineering Co.
Sectional conveyors	Barber-Greene Co.
Permanent conveyors	Hewitt-Robins
Tunnel conveyors	Goodman Mfg. Co.
Gyratory crusher	Allis-Chalmers Mfg. Co.
Vibrating screens (4)	Allis-Chalmers Mfg. Co.
Motor wagon	Allis-Chalmers Mfg. Co.
Motors and Controls	Westinghouse Electric Co.

END

Slurries...handled at lower cost

The new WILFLEY MODEL K Centrifugal Sand Pump embodies important mechanical improvements especially adapted to the handling of cement slurry and results in stepped-up production and substantial power savings. Individual engineering. Write for details.



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Skilled crews and complete stock of core drills and accessory equipment maintained at all times

Core Drill Contractors for more than 60 years

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ROCK PRODUCTS

HAS THE LARGEST ABC CIRCULATION AND HIGHEST RENEWAL PERCENTAGE IN THE NON-METALLIC MINERALS INDUSTRY

Alpha plant *continued from page 96*

to take care of the expanded raw material and clinker requirements.

Finished cement storage capacity is about 300,000 bbl. in 18 silos, each about 29 x 110 ft. Each silo normally holds only one kind of cement to avoid any possibility of mixing or contamination. The plant makes all the standard types of cement, including air-entraining and mortar cement, and the storage silos have plenty of room to maintain stocks of each kind.

The shipping operation is said to be one of the fastest systems in the country, necessary to back up the 'round-the-clock shipping and overnight delivery schedule made possible by the Lime Kiln location.

Key to the shipping system is push-button operation. A pneumatic conveyor system draws cement from a selected bin and pumps it to one compartment in the three 4-compartment shipping silos. Pneumatic conveyors under these silos—also push-button controlled—can fill three railroad cars and a bulk truck at the same time. Shipping weights are automatically controlled; when the determined weight has been reached, the conveyor is stopped and the weight is automatically recorded and printed on a shipping ticket.

Controls in the shipping bins keep them full. When one empties as it is filling a car, it signals for more cement from the main storage silo. When the bin is full, an operator shuts off the supply. With the 12 compartments in the shipping silos, it is possible for the operator to select any one of 12 types of cement for shipment. The pneumatic conveying system also takes cement to storage tanks in the pack house where three automatic packing machines bag cement for shipment.

END



"IT'S JUST ONE OF THOSE DAYS WHEN EVERYTHING GOES WRONG!"



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With a continuous record of O_2 CO_2 and Combustibles of the kiln exit-gas before him, the burner can regulate combustion to obtain maximum fuel economy, and high quality clinker production. Cambridge Gas Analyzers give him this essential record, accurately, quickly and continuously. Customers tell us that these instruments pay for themselves many times over! *Models available:* Single point O_2 two point O_2 Combustibles, three point O_2-CO_2-Combustibles. *Send for literature.*

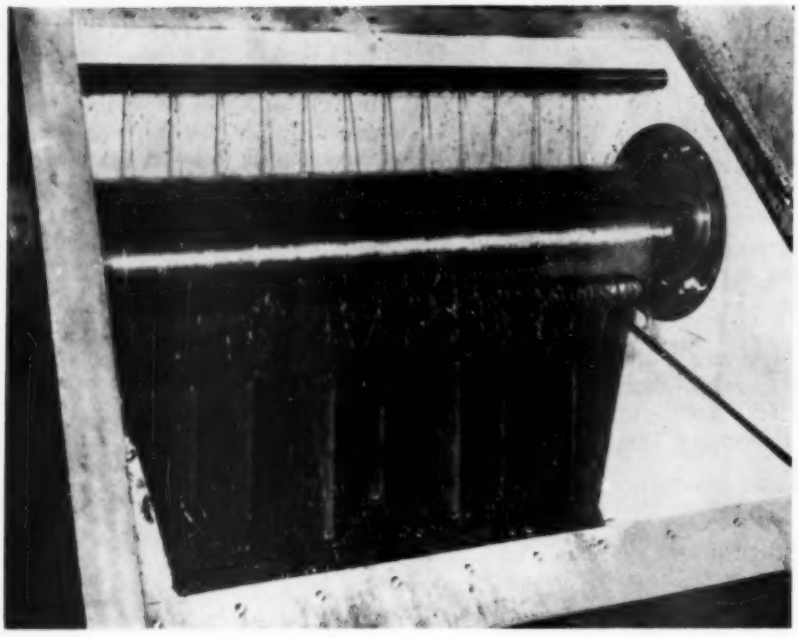
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Kue-Ken, the only crusher with an enclosed oiling system, eliminates costly repairs and downtime typical of crushers depending on inadequate "squirt-can" lubrication methods. Complete with pump, filter, and sealed to keep out dust and dirt, properly lubricated Kue-Ken crushes at more strokes per minute making it the highest capacity crusher, size for size. See in the chart below how a Kue-Ken will supply the capacity you need in a smaller size crusher and use less horsepower. By "crushing without rubbing," Kue-Ken jaw plates last at least 5 times longer. Automatic flywheel release prevents damage from tramp iron.

Table of tons per hour that will pass through crusher with jaws set at dimension shown when measured in the closed position.

Table is based on crushing average hard, dry, quartz or similiar rock weighing at least 100 lbs. per cubic foot when crushed. 32 sizes available from 12" x 5" to 48" x 42".

Kue-Ken crusher size	¾"	1"	1¼"	1½"	2"	2½"	3"	3½"	4"	5"	6"	Horsepower range
24" x 12"	22	26	32	36	43	50	56					15 to 30
30" x 12"	32	35	38	42	55	70	76	85	110			20 to 30
36" x 10"	38	47	57	67	80	91	105					25 to 40
36" x 20"					70	82	90	115	135	160		30 to 50
42" x 25"					90	120	150	165	180	215	250	40 to 60



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KUE-KEN® CRUSHERS

"Crushing without Rubbing"

STRAUB MFG. CO., INC. 8387 Baldwin St., Oakland 21, Calif.

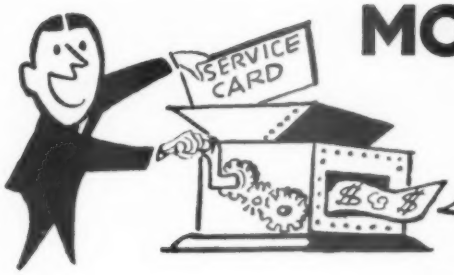
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PORTLAND, OREGON ..... **Contractors Equipment Co.**
LOS ANGELES, CALIF. ..... **Garlinghouse, Fremen Co.**
BERKELEY, CALIF. ..... **West Coast Engine & Equipment Co.**
PHOENIX, ARIZ. ..... **Stapley's**

Pennsylvania Crusher Division, Exclusive Licensed Eastern Manufacturer and Distributor, 323 S. Matlack St., West Chester, Penn.
Armstrong Whitworth (Metal Industries) Ltd., Authorized Licensed Manufacturer and Distributor. Close Works, Gateshead-upon-Tyne 8, England

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JANUARY, 1959
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HOW TO SAVE $ PER DAY...



*For packing industrial explosives

One of these figures probably comes close to the potential savings in YOUR operation when you switch from your present method to the new and improved Bemis Explosives Bags. It depends, of course, on how many holes you shoot per day, and how heavily you load the holes.

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But Bemis Explosives Bags cost only 20 to 25 cents each. At 10 bags per hole and 60 holes per day, that is $150—*a saving of $270 per day.*

Furthermore, Bemis Explosives Bags are the toughest *really waterproof* explosives bags you can find. Leave them in wet holes three days or more . . . and they still shoot perfectly. The Bemis extruded seamless poly liner provides the waterproofness; the tough burlap or Bemis Flexiply® (multi-ply creped kraft) outer tube supplies the strength.

Let us go into your particular problem thoroughly. Write or phone us and a Bemis specialist will see you promptly.

YOU DON'T HAVE A BAG-PACKER?

There's a simple solution to that problem . . . a Bemis Packer-Ette. The capital investment is surprisingly small. It maintains a steady production of six bags per minute. Two-man operation . . . substantial labor saving. Accuracy to 3 ounces on a 33-lb. bag. *Complete* cleanliness.

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WORK FASTER,
WEAR LESS!**

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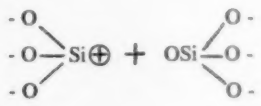
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ROCKY'S NOTES

(Continued from page 19)

bonded by silicon-to-oxygen bonds which are very difficult to break. That is why crushing and grinding silica requires more energy or work than for grinding any other common mineral. Since silica comprises nearly two-thirds of the rocks in the earth's crust, it seems safe to assume that such silica lattices are the principal binding agent in that crust. Some of the other elements, like aluminum, sometimes substitute for silicon in a small way in the lattice, but essentially the network of silicon-oxygen ions (or charged molecules) is the important thing that makes and keeps most rocks solid.

In the paper referred to above, it is assumed that during the fracture of silica grains the silicon-to-oxygen bonds are broken and fragments of the type



on the surface of particles are formed. In words, this means that when the bonds between silicon and oxygen ions are broken, there will be surfaces exposed with unsatisfied oxygen ions each with one negative charge. The negative charges will then be satisfied or neutralized by attraction to them of any available positively charged ion. This makes the silica fragment's surface chemically active, since it will chemically adsorb on such a surface any positively charged elements or ions with which it comes in contact. These experiments proved it was actually chemical adsorption in the case of these organic liquids. There is no reason to believe, however, that the chemical adsorption by particles of freshly broken silica particles is confined to organic liquids, where the ions adsorbed are positively charged, or have a positively charged pole. Water molecules—for example, H_2O (or HOH)—are bipolar and can attach themselves to either positively or negatively charged surfaces. The article proves that these silica surfaces can be rendered hydrophilic or hydrophobic according to the treatment (that is, "water loving" or "water hating").

It seems to us only logical, since freshly crushed silica exhibits such chemical potential, there must be an important part for it to play in the chemistry of portland cements and pozzolans; and that the reactions observed in the hydration and hardening

(Continued on page 158)

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At a ganister rock quarry on Dunnings Mountain, one of two Plymouths owned by J. L. Hartman Company is shown hauling heavily loaded cars over 5 miles of curved track with grades as steep as 8%.

"Saving time and money with our PLYMOUTH"

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Plymouth's reliable efficiency is making continuous hauling, switching and spotting jobs more profitable for large and small companies throughout industry. Any user will tell you that substantial fuel savings per ton of material hauled is a universal benefit in Plymouth models from 3 to 80 tons.

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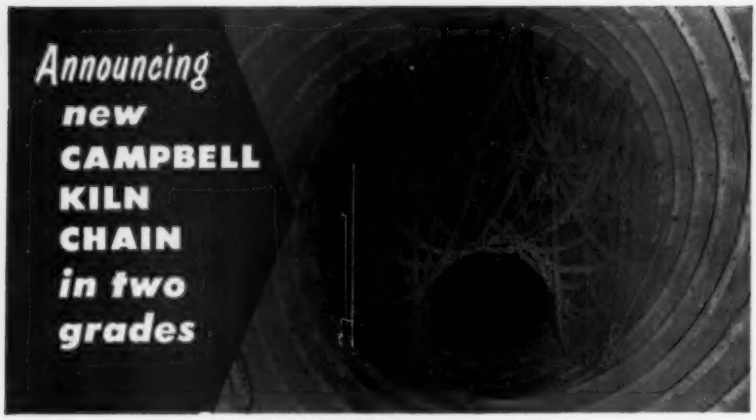
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PLYMOUTH LOCOMOTIVES—
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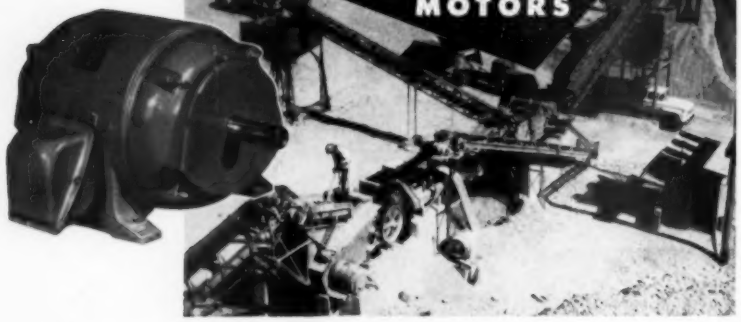
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ROCKY'S NOTES

(Continued from page 156)

of cement are perhaps only the results of the surface adsorption of lime on very minute silicate fragments. It might conceivably be that the chief function of lime in tricalcium and dicalcium silicates of portland cement is to set free reactive silica in the process of hydration. Naturally, the positively charged ions of the alkalies, which are the first and only ingredients of the hydrated cement to be completely dissolved, are readily adsorbed by the silica fragments. They aid materially in the further hydration of the silica (forming a silicate gel) which in turn reacts more slowly with the lime in solution. When the concentration of lime is great enough, it will replace most of the alkali in the silicate gel, or on the reactive silica surfaces, and we get the end result sought for in hardened portland cement or concrete.

We know that this is more or less the zeolite theory of cement chemistry, which is generally considered old and out of date. However, in the case of cement at least a part of the silicate lattice is probably formed during the hydration, setting and hardening of the gel, whereas in the case of a true zeolite, the lattice already exists and remains intact, and the ions of sodium, calcium, etc., are base exchanged by a process well known. In both cases, though, it is recognition of the reactive surfaces of the silicate (and to a less extent aluminates) that is important to a logical explanation of the chemistry involved.

If the foregoing theories are tenable it naturally follows that a pozzolan with the most active silica or silicate surface, and the largest active surface as a whole, would be the one most likely to react fastest with the alkalies and surplus calcium hydroxide in the setting cement, and hence would be the best "mineral admixture to prevent excessive expansion of concrete due to alkali-aggregate reaction." This seems to be borne out in the conclusions of the Army Engineer Report referred to above. The fact that slags were at the bottom of the list is readily explained by the fact that slag is not a pozzolan, nor is its reaction in hydrated portland cement similar to that of a pozzolan. In slag the silica is all combined, much the same as in portland cement, but with considerably less lime. Hence, it will not hydrate and set readily when ground to cement fineness without the addition of more lime or some accelerating salt. Nevertheless, it is an incipient hydraulic cement, and given time, will at least partly hydrate with water alone and

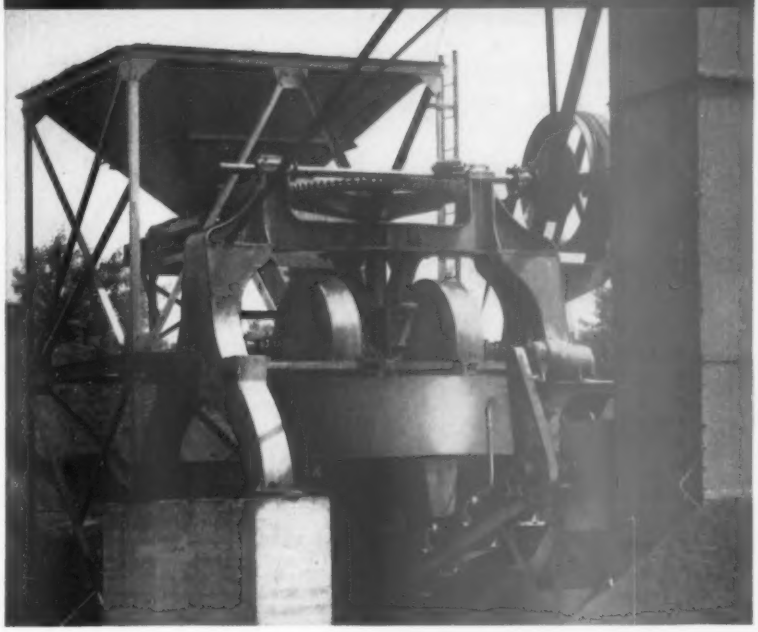
set like any other hydraulic cement. Hence, the only advantage in using slag as an admixture to prevent expansion from alkali-aggregate reaction would be in diluting the cement and adding some of the lower limed calcium silicates, which are probably more resistant to alkali attack than the tricalcium silicate of normal cement. The superior resistance of portland-slag cements in sea water is evidently an example of this.

The lower effectiveness of the fly ashes might be accounted for by the fact that they are practically small spheres of glass. Thus they have the smallest surface area compatible with their gross volume. Moreover, their active silicate or silica surface has to be developed by the chemical or dissolving attack of the alkalies and lime. The evidence of this is the very much greater effectiveness of fly ash when it is interground with the cement. In that way fresh silicate or silica surfaces are produced, and these are immediately chemically active.

The small micelles of silicate gel with the attached adsorbents formed when portland cement grains are hydrated (and never completely hydrated) are still large enough to contain hundreds or thousands of silicate ions. Thus the unhydrated fragments and other fine mineral particles (including particles of calcium oxide or hydroxide) are enclosed in lattices or networks of SiO_2, which tend to link together. It is this lattice of SiO_2 that makes the binding medium of the cement, just as in the silicate rocks of Nature. Concrete is a man-made conglomerate. The mineral particles or ions are wrapped or trapped in the silica lattice, just as the matrix of hydrated cement wraps around and holds together the sand and stone aggregates of the concrete.

The reader can see now why we believe the approach to research on pozzolans is to study the structural chemistry of silica and the silicates, as it is being studied by industries which make other uses of them than as an hydraulic cement. If silica can be studied in connection with its reactions toward hydrocarbons, we see no reason why the same kind of approach can not be achieved in finding how chemically active silica surfaces react with the various inorganic ions that form the basis of cement, both portland and those in Nature which keep the earth's crust intact. We don't do as good a job as Nature did, but maybe that is because we have not given enough study to the way Nature did it—and, as evidenced by the growing use of these various admixtures, we simply are not getting enough silica into our cements. **END**

HUBER-WARCO grinders



30 yards of aggregate per hour

If accurate grinding, in volume, poses a problem in your plant . . . investigate the features of the Huber-Warco No. 9 GRINDER. This unit is ideal for the reduction of cinders, pumice, haydite, slag, and a wide range of quarry and mine products. Material can be handled wet or dry, and no screens are required. Suspended yoke mounted mullers are adjustable to your volume and size requirements. All gears are of long-wearing cut-steel. Unit requires only 25 horsepower. Rugged construction will give years of trouble-free operation. A Huber-Warco No. 9 GRINDER requires only a minimum of maintenance . . . conserves power . . . and will help you produce low-cost, top-quality cinder block. Write for complete details.

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NEW LITERATURE

Fluid drives

DODGE MANUFACTURING CORP. has made available Bulletin A-640B describing Flexidyne dry fluid drives and couplings. Complete with product photographs and engineering drawings, installation pictures showing applications in a broad cross-section of industry, it explains how the device solves many difficult drive problems.

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Couplings

JOHN WALDRON CORP., a subsidiary of the Midland-Ross Corp., has issued Bulletin 61 on the Flexring coupling now sold by John Waldron. Diagrams and tables on the Flexring which comes in four sizes for light hp. applications up to 1000 rpm., are included in the bulletin.

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Heat recovery

ATLAS COPCO EASTERN has issued a folder showing how up to 60 percent of total power input can be reclaimed in useful form from its AR stationary air compressors. The company stated that the power input is recovered in the form of hot water for washing, heating and other industrial purposes at temperatures ranging from 120 to 180 deg. F.

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Open-type motors

ALLIS-CHALMERS has made available Bulletin 05-51B9040 describing the "Super-Seal" open-type motors suitable for many applications previously requiring enclosed designs. The motors are available in all integral hp. frames and have an encapsulated stator design in smaller sizes and "Silco-Flex" insulation in larger sizes.

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Cutting tool materials

METALLURGICAL PRODUCTS Department, General Electric Co., is distributing a bulletin containing information about Carboloy cemented carbide cutting tool materials. Listed in the catalog are both positive and negative rake toolholders, Carboloy cemented carbide tools, tool bits and inserts. There also is a new technical and application data section on Carboloy cemented carbides.

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Wheel tractors

CATERPILLAR TRACTOR CO. has issued Form 33058 explaining the features of the new DW21, Series D, and DW20, Series F, wheel tractors. A detailed explanation of the pressure ratio control system of air induction is also included.

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Vibrating feeders

SYNTRON CO. has published a catalog on its standard and special model electromagnetic vibrating feeders for hard-to-handle bulk materials. Illustrations of typical installations and a variety of application diagrams are included.

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Thermocouples

THE BRISTOL CO. has released Bulletin P1281 giving complete description and specifications of its Armorox thermocouples. Available types, materials, sizes, and thermocouple curves are detailed and some applications are suggested.

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Weighing, filling machine

RICHARDSON SCALE CO. has released Bulletin H-1 describing the Holm Model SS automatic weighing and filling machine for production packaging of free and non-free-flowing materials.

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Conductor systems

THE CLEVELAND CRANE & Engineering Co. is distributing Booklet 1 describing the aluminum inverted-Y conductor systems. Crane and runway electrification for general industrial usage requiring currents of 500 to 1,200 amperes are covered.

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Dust collector

JOY MANUFACTURING CO. has made available Bulletin J-616 describing the Joy Microdyne dust collector. The booklet contains performance curves, complete specifications, cutaway drawings of the inner construction, as well as a description of a related filter for reclamation or removal of the collected slurry.

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Mobile laboratory

SOILTEST, INC., has issued Brochure ML-100 describing a mobile laboratory for on-the-site testing programs. The booklet illustrates the latest laboratory layouts and combinations of testing equipment, and breaks down component testing systems and various test apparatus for soils and concrete.

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Cords and cables

THE OKONITE CO. has made available Bulletin 1108 dealing completely with its line of mold-cured Okoprene (neoprene) sheathed cords and cables. Dimensional data, engineering information, and splicing and terminating instructions are featured.

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Process equipment

HARDINGE CO., INC., has published Bulletin 100-B on its line of process equipment for mining, chemical, stone, ceramics, water, sewage and industrial waste applications. Equipment for agitating and mixing, balling or pelletizing, wet and dry classifying and other operations are included.

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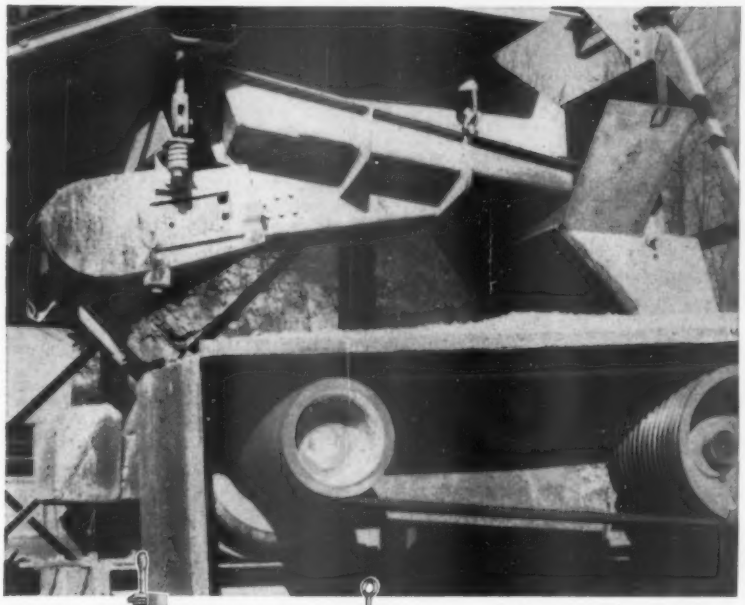
Drilling tools

BRUNNER & LAY, INC. has issued a revised 24-page Catalog 358, containing illustrations of all tools and complete specifications of carbide drill bits, drill rods, air tool accessories and many other items. Included are suggestions on how to make carbide drill bits last longer, plus instructions for sharpening and hardening moil points and digging chisels.

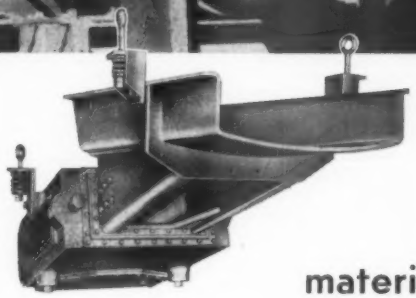
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VIBRATORY FEEDERS



Feeding stone from scalper to secondary crusher



Reduce bulk materials handling cost

SYNTRON Vibratory Feeders are designed for efficient, dependable, high capacity handling of sand, gravel, limestone or run of—quarry rock.

SYNTRON Feeders are durable, constructed to with stand heavy load impact and excessive wear by abrasion. Powered by an electromagnetic principle that eliminates motors, gears, bearings and belts and assures dependable operation with low maintenance.

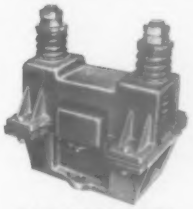
SYNTRON Feeders supply a smooth uniform, flow of materials to belt conveyors, crushers, screens, ball mills, and other process equipment. Rate of feed is instantly adjustable to meet production demands.

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Let SYNTRON cut your materials handling cost and increase production.

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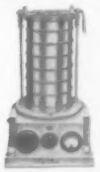
VIBRATING SCREENS



GRAVIMETRIC FEEDERS



DRY FEEDER MACHINES



TEST SIEVE SHAKERS

SYNTRON COMPANY
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NEW U.S. PATENTS

OLIVER S. NORTH

Recently issued patents on nonmetallic minerals*

Gypsum

2,853,394—Method of manufacturing gypsum wallboard consisting of calcined **gypsum,** expanded **perlite** or unexfoliated **vermiculite,** and a small amount of organic fiber and/or glass fiber. (to W. C. Riddell and G. B. Kirk. Assigned to United States Gypsum Co.)

2,856,304—Method of reducing water content in calcined **gypsum** slurries used in the production of wallboard. About 0.05 to 1.0 percent of waste sulfite liquor or related compound is added to the slurry. (to G. B. Kirk. Assigned to Kaiser Gypsum Co., Inc.)

Aggregates

2,853,241—Apparatus and method for processing **perlite** ore to produce an expanded material highly suitable for use as a filter aid or filler. Newly expanded particles are immediately subjected to controlled fracturing to produce a material of low bulk density and wet density, extreme whiteness, and optimum particle size and shape. (to S. Gindoff, L. S. McCollum and A. Polanco, Jr. Assigned to International Minerals & Chemical Corp.)

2,853,285—Method and apparatus for producing **expanded clay** consisting of hard, unicellular, spheroidal particles possessing a bulk density of 15 to 50 lb. per cu. ft. The raw clay is suspended in a gaseous medium in finely divided discrete particle form and subjected to elevated temperature to effect complete fusion. (to J. M. Neff and J. D. McLaughlin. Assigned to Kanium Corp.)

2,854,171—As an improvement in the apparatus shown in U. S. Patent No. 2,767,926 and used for proportioning feed of granulated iron **blast-furnace slag** to a grinding mill, the two discharge apertures are combined into a single aperture. This facilitates feed control, especially when the specific gravity of the material is unusually high and the separate apertures would become quite small. (to M. Trief. One-half assigned to Leon Trief.)

2,855,156—Use of Ottawa **silica sand** in a process for dispersing pigments in liquid media and/or reducing the particle size of pigments. (to S. Hochberg and D. G. Bosse. Assigned to E. I. du Pont de Nemours & Co.)

2,855,191—Design for a furnace and related apparatus for producing an **expanded clay** aggregate which consists of small, unicellular particles. Raw clay may be either preheated or not preheated prior to fusion at temperatures over 2,500 deg. F. (to E. Blaha. Assigned to Selas Corporation of America.)

2,856,133 — Design for a novel crusher for producing broken **gravel, crushed stone,** etc., whereby the direct work required is lessened and wear on the equipment reduced. (to R. D. Dening and L. H. Garlinghouse. Assigned to Garlinghouse Brothers.)

Asbestos

2,852,368—Production of a transmission clutch friction material consisting of a felted porous mixture of **asbestos** fiber, wood particles, cellulose fibers, a sizing material, and a friction modifying agent. (to R. E. Steck and J. F. Orzechowski. Assigned to Raybestos-Manhattan, Inc.)

2,852,821—Compressible side walls of molten metal molds consist of multiple layers of **asbestos** fabric interwoven with metallic strands. (to M. H. Pond. Assigned to Olin Mathieson Chemical Corp.)

2,855,329—In the manufacture of friction lining material, fibrous **asbestos** base is impregnated with a water solution of colloidal silica and the solution evaporated to deposit the silica in situ. (to H. C. Morton. Assigned to The Russell Mfg. Co.)

Mineral wool

2,851,724—**Mineral wool** producing apparatus wherein the feed or flow of molten material from the cupola is converted to ribbon form which, by subdivision across its width, is divided into a large number of small streams which can be efficiently blasted into high-quality mineral wool. (to C. G. Muench. Assigned to The Celotex Corporation.)

2,855,626—In an improved **mineral wool** producing apparatus, the material is kept molten longer than usual, so that longer and finer fibers can be drawn out and formation of globules minimized. (to M. S. Firnhaber. Assigned to Sealtite Insulation Manufacturing Corp.)

Clays

2,853,533—**Fuller's earth** or a nonswelling **bentonite** is used in the preparation of alkylated aromatics. (to L. J. Weaver. Assigned to Monsanto Chemical Co.)

2,856,354—Method for recovering lost circulation in wells using minus 100-mesh expandable-type dehydrated **bentonite** particles coated with a water-repellent substance, such as a highly polymeric silicone. This patent describes improvements on subject matter earlier disclosed in U. S. Patent Nos. 2,634,098 and 2,642,268. (to A. L. Armentrout.)

Dolomite

2,852,340—In the production of nitrogenous fertilizers and simultaneous recovery of Mg $(OH)_2$, $MgCO_3$, or MgO, crude raw **dolomite** is dissolved in nitric acid along with a concentrated solution of **kieserite,** or magnesium sulfate. (to O. Kippe. One-half assigned to Paul O. Tobeler.)

2,856,319—Sugar refinery use of a reactive form of $MgCO_3$, preferably obtained by special recarbonation of burnt **dolomite, magnesite** or the like. (to A. M. Zenzes.)

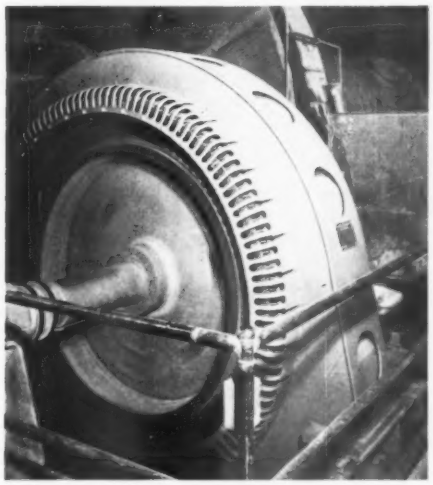
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*Copies of United States patents are available at a cost of 25 cents each from The Commissioner of Patents, Washington 25, D.C. For convenience, coupons, each good for one copy of any patent, may be purchased from that official at the rate of $5.00 per 20-coupon pad or $25.00 per 100-coupon pad.

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G-E SYSTEM ENGINEERING assistance helped reduce construction time and costs on Permanente Cement Co. plant expansion.



NEW BALL MILLS at Permanente Plant are powered by heavy-duty General Electric synchronous motors. Speed-torque characteristics of this 1000-hp motor are matched to the mill to give more dependable starting under specific power system conditions at this plant. G-E motor design provides reliable performance, maximum safety and ease of maintenance.

INDIVIDUAL FIELD EXCITATION for existing and new synchronous ball mill drives is supplied by efficient G-E motor-generator sets. Triple-protected Tri-Clad* motors, combined with job-matched d-c generators provide a more economical, faster-responding power source.



AT PERMANENTE CEMENT CO., G-E EQUIPMENT HELPS . . .

Boost Plant Capacity 1,500,000 bbls./year

The addition of a sixth kiln and three new ball mills at Permanente Cement Company's huge Permanente, California, plant boosted output by 1,500,000 barrels per year. This expansion, necessitated by increased demands from the Company's western states and Pacific islands market brings plant capacity to 8,500,000 barrels per year.

Engineering responsibility for the expansion lay with Kaiser Engineers. Working together with General Electric Application Engineers on a coordinated system basis, they utilized the latest engineering techniques to obtain optimum performance at reduced cost and construction time.

To achieve maximum savings on your plant expansion program, call on General Electric early in your planning stage. Your nearby G-E sales engineer will be happy to assist you, anytime. General Electric Company, Schenectady 5, New York. 658-22

Engineered Electrical Systems for the Cement Industry

GENERAL ELECTRIC

G-E MOTOR CONTROL CENTER (r.) centralizes operation of precipitator and auxiliary motors for greater convenience and safety. Limitamp* 2300-v controllers (l.) are for induced draft fan motor and for transformer supplying 480-v power to motor-control center.

* *Registered Trade-mark of General Electric Co.*



NEW MACHINERY



Portable conveyor is equipped with vibrating screen

A PORTABLE CONVEYOR with vibrating screen is designed for conveying of bulk materials where simple screening into two or three sizes is also needed. The "Loadascreen" is now being marketed with a 40-ft. boom and an 18-in. belt. A range of eight sizes is planned.

The model now being produced consists of a boom of box-type construction mounted on pneumatic-tired wheels for towing and easy handling. The projected larger sizes will be of lattice-type construction. The conveying belt, with head and tail pulley, is mounted on the boom and supported by all-steel ball-bearing idlers.

At the discharge head of the conveyor, a single- or double-deck vibrating screen separates the material into two or three sizes. Deflection plates are fitted so that the screened material can be loaded or stockpiled.

The boom angle can be adjusted by wire winch or—in the case of the larger machines which will join the range soon—by hydraulic ram. Gasoline, diesel or electric motor is available as a power unit. The starters are operated from ground level. *Frederick Parker Ltd., Catherine St., Leicester, England.* **Enter 301 on Reader Card**

Skid-resistant surface

A POWDER and a special liquid binder have been developed for resurfacing floors, stairs, ramps, metal cat-walks and stair treads. Called Stoncap, the product has slip-resistant qualities designed to stop floor accidents. It is said to be resistant to greases, oils, fats, brines and alkalies.

The product is ready for foot traffic 5 hr. after installation. Trucks may be rolled on the surface within 24 hr. Stoncap may be applied on wet surfaces and is available in five colors—maroon, gun metal, forest green, light green and light grey. *Stonhard Co., Inc., 1306 Spring Garden St., Philadelphia 23, Pa.*

Enter 302 on Reader Card

Single-phase motors



THE CAPACITOR, starting switch, thermostat and terminal board in these single-phase fractional horsepower motors are totally enclosed to prevent contamination by atmospheric dust and dirt. The cutaway shows the elements that are contained inside the sealed capsule.

The new motors are being introduced as NEMA general purpose, rigid base designs from ¼ through 1½ hp. in the 56 frame and as blower motors in the 56 frame from ⅓ through 3 hp. *A. O. Smith Corp., Tipp City, Ohio.* **Enter 300 on Reader Card**

Crawler-loader-dozer is a double-duty unit

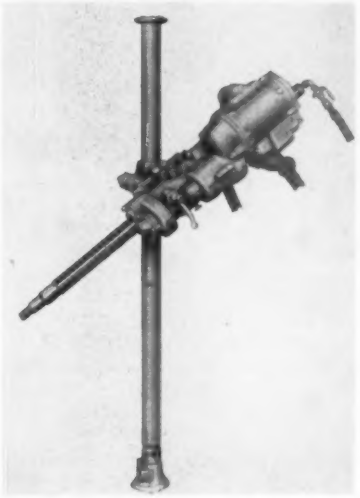
A COMBINATION ⅝-cu. yd. loader and dozer, the 42-hp., Utility 310 crawler-loader-dozer, provides two heavy-duty tools for digging, loading, leveling, etc. Vertical connecting arms between loader and dozer serve as lift when operating the full-size blade. Switching to loader operation takes only 5 min. to pull 4 pins in connecting arms, and involves no change in the single hydraulic system that operates both tools.

The new unit employs a basic crawler tractor that develops 30 drawbar hp. and 5,690 lb. drawbar pull or push. The ⅝-cu. yd. loader applies 4,300 lb. breakaway force, lifts 2,600 lb. to over 9-ft. height and clears full 8 ft. 10 in. after dumping. Dozer blades are standard sizes—71 x 23-in. bulldozer or 88 x 25½-in. angledozer. Wider versatility may be added by equipping with rear-end attachments, including backhoe, scarifier, five-ton winch or three-point quick-hitch for a large assortment of specialized tools. *J. I. Case Co., Racine, Wis.*



Enter 303 on Reader Card

Diamond drill features reversible air motor



A DIAMOND DRILL designated the CP-65 is recommended for blast-hole, coring or grout-hole work. Powered by a high-torque rotary motor, the unit drills to depths of 600 ft. (using EW or EX fittings) with ordinary mine air pressures. The motor has been made reversible; this feature is said to permit rapid unscrewing and screwing of rod joints. Reversibility also permits the chuck to be moved quickly into drilling position.

The CP-65 is a fully enclosed, dust-proof, oil-tight unit. Ball bearings are used throughout the drill, and its spur-gear drive has all parts running in grease or oil.

The unit mounts on a standard rock-drill saddle and works in any position from a column, arm or cross-bar. The complete drill with a built-in swivel head is 42½ in. long. The drill weighs 200 lb. An air-actuated rod puller is optional. *Chicago Pneumatic Tool Co., 6 E. 44th St., New York 17, N. Y.*

Enter 335 on Reader Card

Conveyor chain

A NEW, STRONGER FLIGHT design and greater chain strength are said to be featured in the "Superflite" No. 4452 12-in. conveyor chain. The new conveyor chain has an average ultimate strength of 27,000 lb. This extra strength is provided by an increase in depth of 1/16 in. in the heat-treated chain sidebars, plus the use of special heat-treated malleable iron.

Interchangeable with chains used on all 12-in. conveyors, the Superflite No. 4452 is furnished in standard bundle lengths of 12 ft. 3½ in., weighing 67 lb. *The Long Co., P.O. Box 331, Oak Hill, W. Va.*

Enter 336 on Reader Card

Rotary air compressor

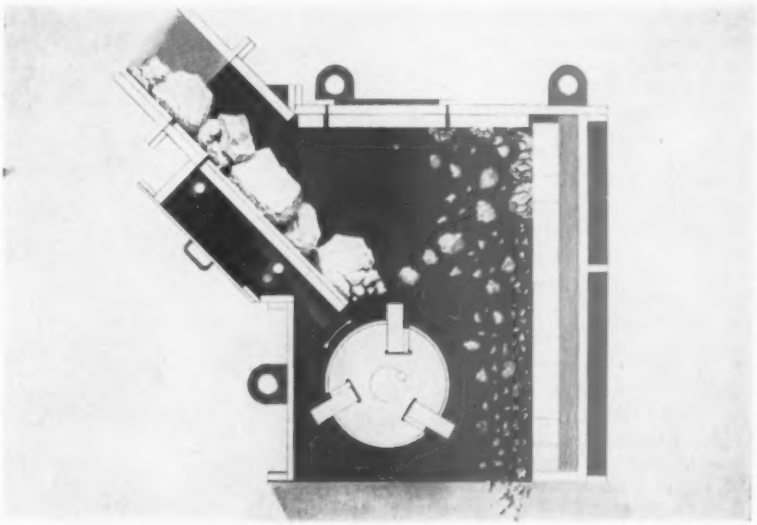
THE LIGHTEST (2,250 lb.) and slowest (1,600 rpm.) 125-cfm. rotary portable air compressor on the market is the way this manufacturer describes the fourth of its new line of rotary air compressors. Previous models introduced include 365, 600 and 1,200-cfm. machines.

The new 125RG2 is a sliding-vane-type, two-stage compressor with an in-line cylinder arrangement. It is rated at 125 cfm. of free air compressed to 100 psi. The compressor is powered, by direct drive, with a wet-sleeve, overhead-valve engine. A modulating control matches air supply to demand within a pressure range of 10 psi. "One-valve" air-pressure adjustment is provided.

The engine-compressor is supported on a welded steel frame of unit construction and is enclosed in a lockable housing. Three-point suspension protects against towing distortion over rough terrain. The towing eye on the draw bar can be replaced by a ball-socket hitch when required. Length of the compressor is 10 ft. 7 in., width is 5 ft. 4 in. and height is 5 ft. ½ in. Tool boxes are full length of housing, with no wheel-well interference. *Le Roi Div., Westinghouse Air Brake Co., Milwaukee 1, Wis.*

Enter 337 on Reader Card

Secondary crushers take medium-sized initial feed



A SERIES of secondary crushers can be fed by oversize screened-out material of the product of primary crushers or by medium-sized initial feed, when the product of secondary crushers can be screened and oversize can be recycled.

Feed openings vary from 24 x 12 in. to 36 x 30 in. Entire assembly is mounted in a heavy welded-steel frame with heavy cast manganese steel impeller bars fastened in the rotor. Cross-section shows how the feed slides down the adjustable feed chute into the path of the revolving impeller bars. *Jeffrey Mfg. Co., Columbus, Ohio.*

Enter 338 on Reader Card

(Continued on following page)

NEW MACHINERY

(Continued from page 165)



Dragline buckets

A NEW GROUP of heavy-duty mining-type models is being added to a line of dragline buckets. Built in 3, 4 and 5-cu. yd. sizes, all buckets have arch and lip built from heat-treated T-1 steel. Chains are of heat-treated, forged alloy steel.

The 3-cu. yd. model weighs 6,700 lb., compared with the manufacturer's standard 3-cu. yd. dragline which weighs 5,875 lb. The new 5-cu. yd. model weighs 11,000 lb.

All other features of the standard line, including full-length patented welded stiffeners, reversible manganese alloy steel teeth and adjustable hitch connections, are retained. All wear points are protected by skid bars and wear plates.

Over-all widths range from 6 ft. 1 in. to 6 ft. 9 in. Lengths of the new line range from 20 ft. 4 in. for the 3-cu. yd. model to 28 ft. 8 in. for the 5-cu. yd. model. The new models are available perforated for wet service, if desired. *Williams Bucket Div., Wellman Engineering Co., 7000 Central Ave., Cleveland, Ohio.*

Enter 304 on Reader Card

Flow transmitter

A FLOW TRANSMITTER, the Model 245, is designed to measure flow, liquid level or any other variable that is a function of differential pressure. The new transmitter has no torque tubes, stuffing boxes, knife edges or bearings. The transmitter is of the bellows-actuated type—the differential transformer core moves directly with the bellows. The transmitter is liquid-free; the only sensing unit is the single-element bellows.

Available in standard industrial ranges from 20-in. to 600-in. water differential, the new transmitter was designed for use with the manufacturer's Universal electronic recorder. Together, these instruments form a system to measure, indicate and/or record differential pressure.

The equalizing and shutoff-valve assembly is self-contained within the unit housing. The unit can be mounted on a vertical section of 2-in. pipe. A wall-mounting bracket is also available. *The Hays Corp., Michigan City, Ind.*

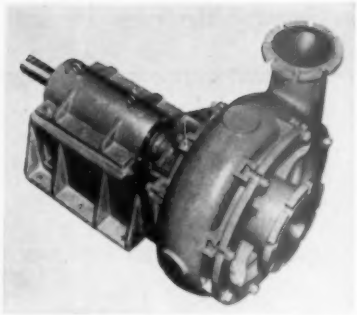
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Shrouded blocks

BLOCKS ARE NOW AVAILABLE with shrouded housings to insure proper seating of running rope. The shrouds help prevent rope from binding at the throat of the block, thus reducing breakage and cable wear.

The shrouds are recommended where blocks must operate in a horizontal plane and there is a tendency for the rope to leave the sheave grooves. Shrouded blocks have a wide application in rigging work and in the mining field. These are made of high alloy steel. *Sauerman Bros., Inc., 630 S. 28th Ave., Bellwood, Ill.*

Enter 306 on Reader Card



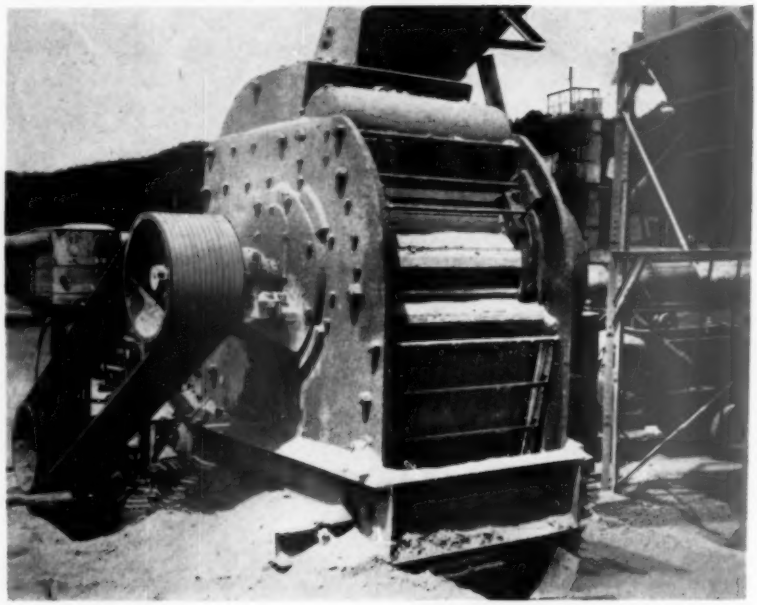
Solids pump

A HEAVY-DUTY, low-speed centrifugal pump, Model CK, is designed especially to handle fluids containing random-size solids and highly abrasive materials. This pump is applicable for dredging as well as moving slurries comprised of sand, coal, tailings, gravel, lime and process wastes in addition to other abrasive or pulpy mixtures.

Available in five sizes—4, 6, 8, 10 and 12 in.— the solids pump is made of abrasion-resistant metals—semi-steel, ni-hard, cast steel or manganese steel. *Morris Machine Works, Baldwinsville, N.Y.*

Enter 307 on Reader Card

Hammermill has four-corner hammer

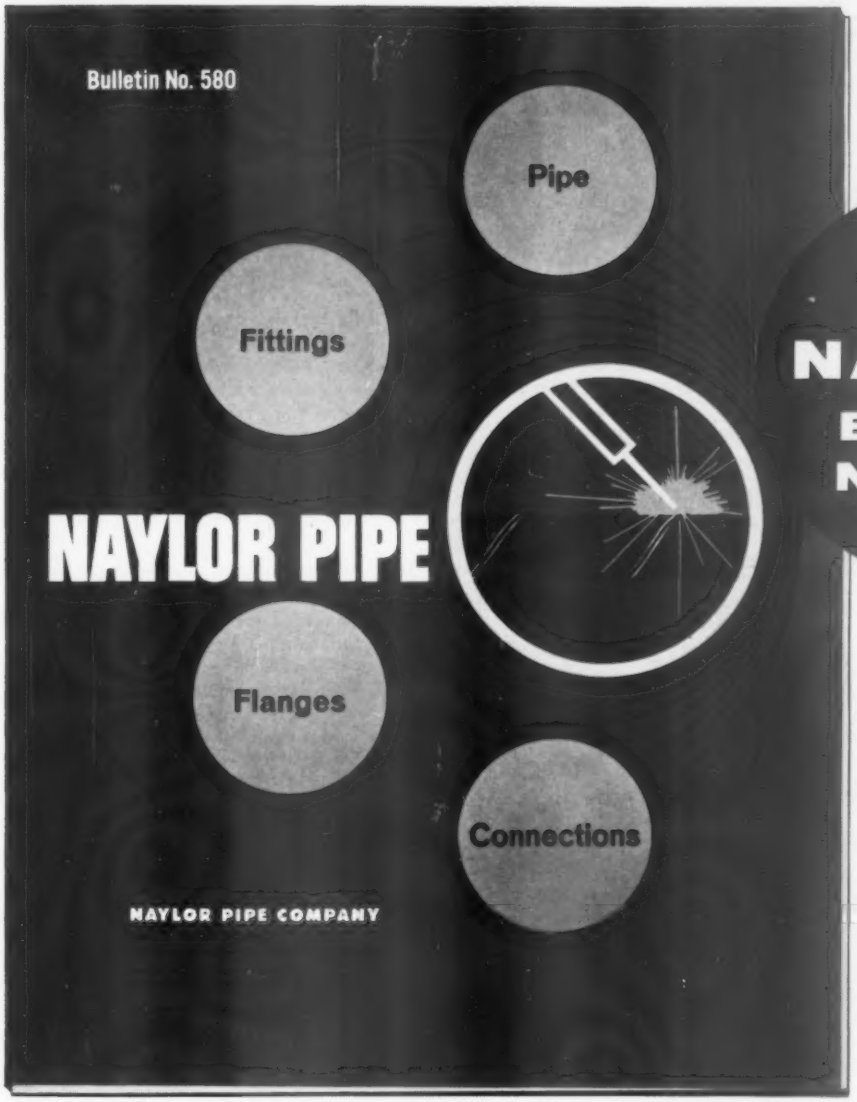


A new 36 x 36-in. hammermill is completely lined on the inside and contains manganese steel hammers and breaker plates. Outstanding new design feature of this No. 90 Model DR pulverizer is the four-corner hammer which swings from either end or side. The hammermill contains six hammers, two per rod, weighing 165 lb. each. Capacities from 60 to 200 tph. are offered. A 200 to 250-hp. drive is required. *Day Pulverizer Co., Inc., 1701 Rossville Blvd., Chattanooga, Tenn.*

Enter 308 on Reader Card

(Continued on page 168)

Helps ANSWER Your PIPE PROBLEMS



Write for NAYLOR Bulletin No. 580

Here in concise form is helpful data covering NAYLOR pipe, fittings and connections for use in mining applications. Bulletin No. 580 includes standard specifications on NAYLOR Spiralweld pipe in sizes from 4" to 30"; standard fittings and welding flanges carried in stock; NAYLOR Wedgelock couplings and all types of connections to meet pipe line needs. Write for your copy today.

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NEW MACHINERY

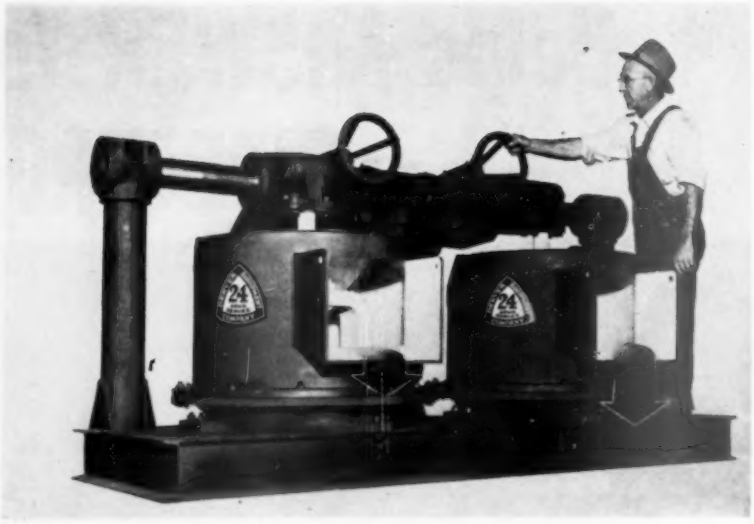
(Continued from page 166)

Adjustable-speed sheave

A STATIONARY-CONTROL, adjustable-speed sheave—the Adjustex sheave—is available for A, B and C section belts in two, three and four-groove construction. Pitch diameter sizes parallel the former Vari-Pitch sheaves. One entirely new diameter for C section belts—7.9 to 9.7-in. pitch diameter—is available for higher speed and wider speed-range applications. Design capacities to 75 hp. are covered by 33 sizes.

A new concept of pitch-diameter adjustment is said to be featured in this sheave. Patented interdigitated lug disc design is retained. Adjustment is made through a single adjusting screw and a hollow lock screw. Relative position between stationary and movable discs is maintained at all pitch diameters without disc to main sleeve set screws. *Allis-Chalmers Mfg. Co., Milwaukee 1, Wis.*

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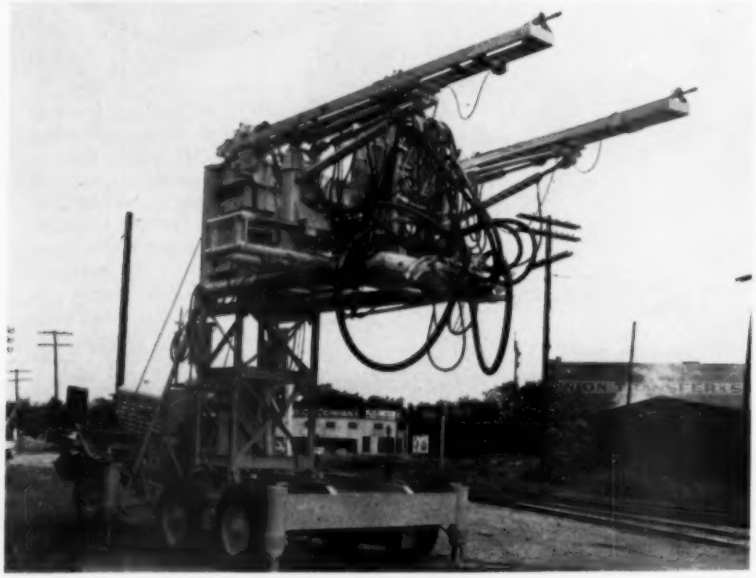
Adjustable-stroke pump has spiral diaphragm

AN ADJUSTABLE-STROKE diaphragm pump is available in a full range of sizes, from 1-in. Simplex to 10-in. Duplex, and in capacities from 2½ to 1,000 gpm. A new diaphragm has a patented spiral nylon-cord construction. The curvature of the diaphragm provides a catenary-curve flexing throughout the entire stroke, avoiding destructive kinking. A heavy molded rim distributes tension to the entire circumference of the diaphragm and permits the diaphragm to be clamped in place. This eliminates bolt holes.

Other design and operating features include anti-friction bearings, simplified drive using standard motor and hand-wheel adjustment to change the length of stroke while pump is operating. The new diaphragm pump is used for pumping filtrates, metering flotation feed or regulating thickener underflow. *Denver Equipment Co., P.O. Box 5268, Denver 17, Colo.*

Enter 333 on Reader Card

Jumbo drill is completely self-contained



THE MODEL VM-212-17 jumbo drill shown here will drill all holes in a 12-ft.-wide and 20-ft.-high heading in one setting of the jumbo.

The machine is completely self-contained and does not require mine air or electricity for its operation. Power for traveling is provided by a diesel engine driving the four equalized rear wheels through an automotive drive arrangement.

An exhaust-gas scrubber permits underground operation of the diesel engine. Hydraulic power is provided by an electric-motor-driven pump. Power for the electric motor is supplied by an electric generator driven by the diesel engine. All drill, jib-arm and platform controls are centralized on one control board and the drills work on an automatic feed and retraction cycle, so that one man can operate both drills. *Rogers Iron Works Co., Joplin, Mo.*

Enter 332 on Reader Card

Gross bagging scale

A GROSS BAGGING SCALE with feeder features an eye-level visual balance indicator. This indicator operates on the torsion principle to insure indication that is rapid, accurate and stable. The new unit, designated the GA-17 gross bagging scale, was developed to meet the needs of small plants for an inexpensive, one-man bagging unit. With this scale, non-free flowing materials are bagged.

Designed for use with open-mouth textile and multiwall paper bags, the unit provides accurate filling of 10 to 140-lb. bags. The weigh beam indicator-pointer is marked off in easy-to-read numerals and informs the operator at a glance the balance of the weigh beam. *Richardson Scale Co., Clifton, N.J.*

Enter 334 on Reader Card

(Continued on page 171)

Bigger Equipment



Fast, powerful 6-yd. dragline reaches way out for a heaped bucket.

...The answer to higher production at lower net cost

The trend among producers everywhere has been a steady move to the use of bigger equipment in quarries and plants. Because the larger machines can work faster and produce more with reduced labor requirements, the cost per ton produced is substantially lower. Greater productivity cancels out the higher initial investment in a surprisingly short time.

Shovel prime producer. In the sand and gravel and crushed stone industries, the power shovel remains, today more than ever before, the primary producer. Your production rate depends upon it and unit costs will usually vary inversely with the hourly output of the shovel. As the shovel capacity grows larger, labor costs remain practically the same. After all, it takes the same operator to run a 5-yd. machine or a 1-yd. rig. Without increasing the labor cost, substantially greater tonnage can be moved. Generally speaking, the most modern and successful operators in this business today have discovered that in the long run, the most economical equipment is big equipment.

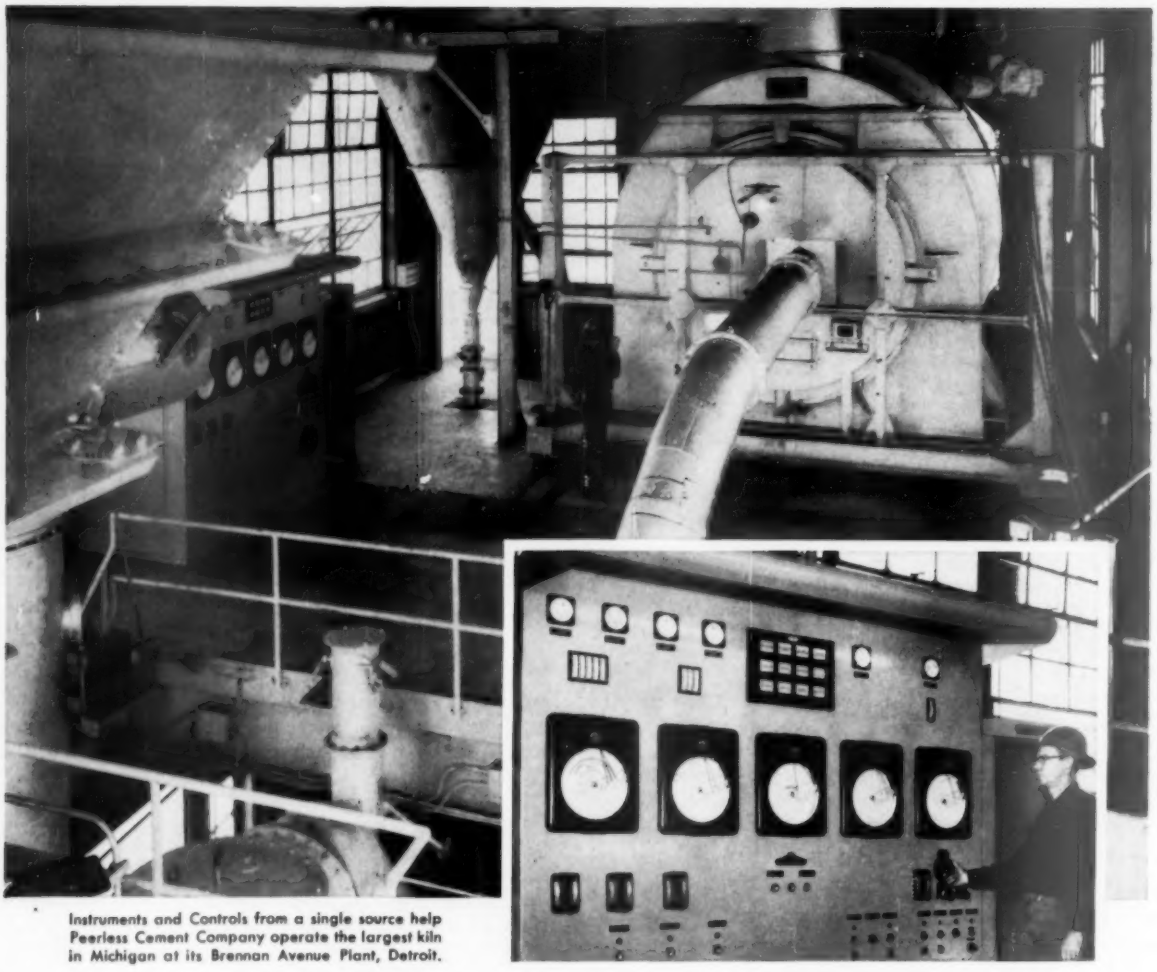
Big 3-yd. shovel has stamina to keep digging rock without letup.



Longer working life. In rock or stone, nothing beats the trouble-free digging and loading ability of a big, rugged shovel in a 3-yd. or larger capacity. Powerful, fast shovels are built to take the rough punishment of rock digging for years on end without expensive breakdowns. Units built by the Manitowoc Engineering Corp., for instance, illustrate how the manufacturer *engineers* every component of his machine to meet the rigors of pit and quarry work. Manitowocs have reinforced, alloy steel dipper sticks; huge, heavy carbodies; extra-stable, wide-spread crawlers; powerful, independent chain crowds with a high speed retract; 3-stage torque converter power applications; simple design with "Power-Flo" drive using a minimum number of gears; long-life, alloy steel utilized at every point of greatest wear; and many other long-lasting parts to insure steady production with the least amount of attention and service.

Get ready now to meet the stepped-up demands for cement and stone. Increase your pit output and raise your profit margin by switching to larger equipment soon. Modern, big-capacity excavators will give you a better chance to make a fair profit in the busy, highly competitive days ahead. To beat the competition, you'll want a hard-digging Manitowoc with the power, speed and reach to put you way ahead. Your Manitowoc distributor is the man to see . . . now! And ask him for a copy of the helpful, informative folder, "Manitowoc for more Profitable Production" . . . it contains details you'll want to know about the full line of Manitowoc units, ranging from 1-yd. to 5½-yd. in capacity. Manitowoc Engineering Corp., Manitowoc, Wisconsin. (A subsidiary of The Manitowoc Company, Inc.).

Enter 1515 on Reader Card



Instruments and Controls from a single source help Peerless Cement Company operate the largest kiln in Michigan at its Brennan Avenue Plant, Detroit.

This giant kiln gives peak performance <u>longer</u> with Bailey Controls

The Peerless Cement Company of Detroit demands maximum capacity, uniform production and low fuel rate from its largest kiln . . . and Peerless gets it!

They do it with a Bailey Control System that gives them complete control of combustion, clinker cooler, and other kiln variables.

The system keeps continuous chart records of 11 important variables, including temperatures, drafts, air flow, kiln speed, fan speed, % oxygen, and % combustibles.

All this is done so dependably that the kiln often makes week-long runs without being touched.

All recording receivers in the Bailey System are plug-in components—easily removed, regrouped, or replaced to meet changing requirements. Additional records are added simply by plugging in receivers on existing recorder cases. Your Bailey Engineer can help you plan for peak performance — call him or write for your Bailey Kiln Control Folder.

C115-1

BAILEY METER COMPANY

1039 IVANHOE ROAD • CLEVELAND 10, OHIO

In Canada—Bailey Meter Company Limited, Montreal

BAILEY METERS

Enter 1428 on Reader Card

NEW MACHINERY

(Continued from page 168)



Conveyor belt splice

A NEW METHOD of splicing conveyor and elevator belts in the field—designated "Wedlok splice"—is a high-tension mechanical fastener splice consisting of a V-shaped joint that forms a seal under tension. It is secured by means of specially designed tip and tail fasteners anchored at the extremeties of two rows of bolt and plate fasteners.

According to the manufacturer, experimental and on-the-job tests have proved the splice to be dependable, safe, tight and durable for operating tensions up to 700 lb. per inch of width rating on belts of 5 or more plies and thicknesses of ½ in. and over. The splice applies on belts of natural or synthetic fabrics, cord construction or any combination strength-member construction with the exception of steel wire. *Manhattan Rubber Div., Raybestos-Manhattan, Inc., Passaic, N.J.*

Enter 339 on Reader Card

Air vibrator

A PORTABLE AIR VIBRATOR that can be attached to almost any type of frame, bin, box or table without use of bolts is now on the market. This portable 3-in. VGV air vibrator, which has jaws that open to 2 in., is attached by tightening the vise-like clamp that is a part of the vibrator. This vibrator also has an eye through which a hoist hook may be attached for ease in moving the vibrator.

Over-all dimensions are 14¾ x 13 x 6 in. Weight is approximately 90 lb. The vibrator develops 3,600 vpm. at 60 psi. with air consumption of about 20 cfm. *Cleveland Vibrator Co., 2828 Clinton Ave., Cleveland 13, Ohio.*

Enter 340 on Reader Card

Crawler crane lifts more than its weight



A 40-TON CRAWLER MACHINE lifts and walks with more than its own weight. For job-to-job transport, it can be stripped down to an 8-ft. over-all width and approximately 32,000 lb. within two hours.

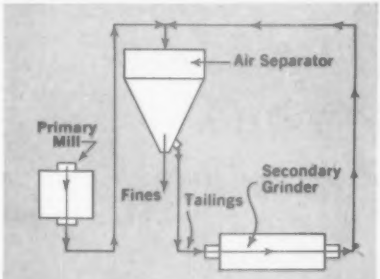
With a crawler base that is 15 ft. long and more than 14 ft. wide (with 42-in. shoes), the new LS-108 has a spread-eagle stance to give it exceptional stability. Unassisted, it will pick up and handle 160 ft. of the optional tubular boom and jib.

Standard equipment includes Speed-o-Matic power hydraulic controls, two-speed travel in either direction with hydraulic power steering, independent rapid boomhoist with boom-lowering clutch and retractable high gantry that also removes the counterweight under power. Optionals include reversing clutches for either or both main drums, third drum, hydraulically controlled swing brake, engines with torque converters and elevated cab. *Link-Belt Speeder Corp., Cedar Rapids, Iowa.* **Enter 341 on Reader Card**

(Continued on following page)

STOP OVERWORKING GRINDING MILLS

Boost Production of 40 to 400 Mesh Fines As Much As 300%



STURTEVANT CLOSED CIRCUIT SYSTEM: Primary Mill runs open, load is circulated through air separator. Desired fines are discharged. Oversize recirculates to secondary grinder and then to air separator for further classification.



Current users of Sturtevant Air Separators include manufacturers of sulfur, soybeans, phosphate, chocolate, feldspar, sand, pigments, limestone fillers, abrasives, plasters, ceramics and cement.

Sturtevant Air Separators Can Lower Power Costs Up To 50%

Production capacity impossible in single-pass grinding results from using Sturtevant Air Separators in closed-circuit grinding systems. They are of proved advantage in all secondary reduction processes.

Fines pass through grinding mills unhindered, are classified, and the oversize returns for further grinding. Grinding mills are free to perform at top efficiency, their output frequently increased as much as 300% and power costs cut up to 50% (documented by 30 years of Sturtevant air separation experience in the cement industry).

Precise Classification; Circulates Loads of 800 tph

Sturtevant Air Separators circulate production loads of up to 800 tph. Simple adjustments make possible counter-action between air currents and centrifugal force to the point where a product of almost any desired fineness may be collected while coarser sizes are rejected.

A 16 FT. STURTEVANT, for example, took a feed rate of 800 tph, containing only a small percentage of desired fines, and delivered 30 tph 90% 200 mesh, recirculating the oversize through the grinding circuit. (In the cement industry, Sturtevant units deliver up to 60 tph raw cement fines, 40 tph finished cement fines.)

Nine models available, diameters from 3 to 18 ft. For more information, request Bulletin No. 087. (Bulletins also available on Micronizers, Blenders, Crushers, Grinders.) Write STURTEVANT MILL CO., 102 Clayton St., Boston, Mass.

Enter 1483 on Reader Card

WHAT ARE YOUR RESERVES?

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LET US HELP YOU FIND OUT

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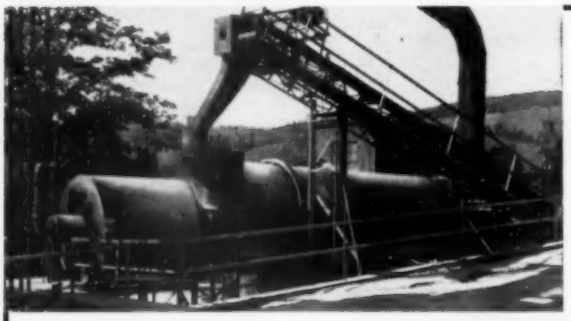
Coal in Kentucky . . . Uranium on the Colorado plateau . . . Bauxite in the Ozarks . . . Limestone in Pennsylvania . . . Copper in Montana . . . These are but a few examples of the extent of our operations. Throughout the United States and even in many foreign countries we have successfully explored and proved ore reserves for our many customers, and where normal methods have failed, special techniques have been developed. In the Gas Hills Area of Wyoming, for example, we successfully cored the loose sand and siltstone where others had failed by "freezing" the material. Our personnel and equipment are stationed throughout the United States awaiting your call.

SPRAGUE & HENWOOD, Inc.
SCRANTON 2, PA.

S&H SINCE 1892

New York—Philadelphia—Atlanta—Pittsburgh—Grand Junction, Colo.—Buchans, N.F.

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7'-0 x 30'-0 oil heated rotary dryer removes excess moisture.

Unique cup shaped lifters are staggered in the unit to assure even distribution of the sand particles, resulting in greatly increased capacity and efficiency of the dryer.



A McDermott Dryer Installation at the North American Refractories Plant, Little Gap, Pa.
Sound Engineering Economy and Consistently Superior Performance are built into all McDermott

McDERMOTT BROS. CO.

Dryers . Coolers . Kilns

McDERMOTT BROS. CO.
Allentown Pennsylvania
Phone HEMLOCK 3-3231

Enter 1517 on Reader Card

NEW MACHINERY

(Continued from preceding page)

Expanded diesel line

ADDITION OF EIGHT new basic units to its line of two-cycle diesel engines has been announced by Detroit Diesel Engine Division of General Motors. Formerly covering the 30 to 893-hp. range, the GM Diesel line has been broadened into a power line offering single, multiple and turbopowered engines ranging from 20 to 1,650 hp.

With 13 basic engines and six multiple units in its line, GM Diesel now claims the widest range of diesel engines ever offered by any manufacturer. The newly expanded line is significant to the construction and road-building industries since GM Diesel engines now meet power requirements in the lower hp. ranges and in the greater hp. requirements constantly being required for bigger and bigger earthmovers and other construction machinery.

Following a three-year program of designing, refining and testing, GM Diesel has developed four new single V-type engines in the 71 series ranging from 252 to 675 hp. and a new group of smaller engines known as the 53 series ranging from 20 to a maximum of 195 hp.

In the new engines, General Motors engineers maintain the wide interchangeability of parts in their diesel engine line. With only three cylinder sizes, pistons, rings, valves, valve operating mechanisms, injectors and many other parts are interchangeable, engine for engine, within each series. The Series 53 engines are basically scaled-down versions of Series 71 units; therefore, their operation and maintenance present no problems to mechanics familiar with previous engines in the line. *Detroit Diesel Engine Division, General Motors Corp., 13400 W. Outer Drive, Detroit 28, Mich.*

Enter 345 on Reader Card

Television accessory

THE "MAGNIPORT" UNIT is especially designed for use with closed-circuit television systems used for remote reading of boiler-drum water-level gauges in power plants. The unit comes pre-wired, with Lumiline lamps installed, ready to mount directly to any 15-in., Multi-Port, water-level gauge. The unit includes a twist-lock type socket and one spare Lumiline lamp. Power is used only to provide front illumination of the magnifying ports for better television viewing. No additional front illumination is required. The unit weighs 20 lb. *Diamond Power Specialty Corp., Lancaster, Ohio.*

Enter 346 on Reader Card END



Next month, February 16-19, your industry meets in colorful New Orleans to discuss the problems most vital to your business in the period ahead.

These are critical times. Make your plans, make your hotel reservation and BE THERE!

Some of the subjects you'll hear and talk about in panel and open round table discussions:

- Our industries' share of the market in 1959 and beyond
- Industry negotiations with unions in 1958
- Engineering and research, our U. of Maryland laboratory
- Merchandising techniques
- Public relations programs
- Impact of zoning regulation
- Safety programs
- Business problems: taxation, freight rates, better cost analysis, many others
- Mobile Radio

1959 CONVENTIONS

NSGA — NATIONAL SAND AND GRAVEL ASSOCIATION
43rd ANNUAL CONVENTION

NATIONAL READY MIXED NRMCA CONCRETE ASSOCIATION
29th ANNUAL CONVENTION

NATIONAL SAND AND GRAVEL ASSOCIATION
NATIONAL READY MIXED CONCRETE ASSOCIATION

Convention registrations will begin at The Roosevelt Friday morning, February 13.

Committee meetings start February 13. General sessions open Tuesday, February 17, and continue twice daily through Thursday afternoon.

YOUR MOST IMPORTANT EVENT IN 1959

MANUFACTURERS NEWS

Clark top sales positions to York, Richards



York



Richards

THE CONSTRUCTION MACHINERY DIVISION of Clark Equipment Co., Benton Harbor, Mich., has created the positions of sales manager and assistant sales manager because of the extension of their Michigan product line.

Alvin E. York, formerly manager of parts and service, has been appointed sales manager. Prior to joining Clark in 1956, Mr. York was with Link-Belt Speeder Corp. for 14 years, the last ten as service manager.

Wendell V. Richards, formerly product specialist manager, is assistant sales manager. Mr. Richards has 20 years' experience in sales and market research in heavy construction and earthmoving fields obtained at Clark, R. G. LeTourneau, Inc., and LeTourneau-Westinghouse Co.

Smith personnel promotions

SMITH ENGINEERING WORKS, Milwaukee, Wis., has announced the following promotions in its organization: James E. Stibor, manager of stationary plant department; John M. Herde, assistant manager of the stationary plant department; Ralph J. Lippert, supervisor of design, portable plant department; and F. Curtis Archer, manager of machine design and development department.

District sales manager

THE LULL ENGINEERING CO., St. Paul, Minn., has announced the appointment of Al Tietgen as midwestern district sales manager. Mr. Tietgen has had wide experience in the material handling field. Before joining Lull he was with the American Road Equipment Co., Omaha, for 16 years.

Completes expansion and modernization of bag plant

ST. REGIS PAPER CO., New York, N.Y., has announced that it has completed the expansion and modernization of its multiwall bag plant at Kansas City, Mo. The Kansas City plant was opened in June, 1956, and at the time was equipped only to manufacture sewn multiwall bags. Now, with its newly installed stepped-end bag machine and expanded engraving, printing, sewing and shipping departments, it is equipped to manufacture pasted open mouth and valve bags as well as the new stepped-end bags.

Various manufacturing departments have been relocated and offices modernized for efficient operation. The plant now has approximately 105,000 sq. ft. of floor space.

Case moves equipment to Nassau for premiere



J. I. CASE CO., Racine, Wis., completed technical arrangements to transport 5,000 dealers from all over the globe to a world premiere of its equipment lines at Nassau in the Bahamas. Four major airlines are moving nearly a thousand people in and out of Nassau every five days from 42 departure points from coast to coast.

A converted LST landed Case tractor shovels, brush-rake-equipped dozers, wheel-type loaders, a crawler fork-lift and a trailer-load of lumber on a beach at Nassau to clear a site and erect an arena for the world premiere.

LeTourneau-Westinghouse wins mail advertising award

LeTourneau-Westinghouse Co., Peoria, Ill., has received a top advertising honor, an award from the Direct Mail Advertising Association, Inc., for its mail advertising during the year which ended August 1. The award was presented at the 41st annual convention in St. Louis, Mo.

The company won its award as "direct mail leader" for an external house publication, *Earthmover News*, which has a circulation of 60,000 copies.

Westvaco enlarges sales and service organization

West Virginia Pulp and Paper Co., New Orleans, La., has announced new positions in the Southern region of its Multiwall Bag Division.

Atlanta district: Henry M. Howe, district sales manager; Samuel O. Wilkes, Ernest E. Lockett and H. L. Frizzell, sales representatives.

Dallas district: Stanley P. Herd, district sales manager; Eugene O. Wilson, sales representative—Dallas area; James A. Schoenstein, sales representative—Houston area, and H. Dent Laney, sales representative—Fort Worth area.

Torrance, Calif., district: Frank L. Smith, district sales manager; sales representatives are Mark N. Thomson and J. Edward Addicott, both of Los Angeles, William P. Gatts, San Francisco, Richard P. Allen, Sacramento, and William M. Ritchie, Denver.

Safety school

The Wire Rope Division of Jones & Laughlin Steel Corp., Pittsburgh, Pa., has initiated a new "Safety in Lifting" School with a two-day presentation to representatives of leading industries in the Muncy-Williamsport, Pa., area.

The safety school will visit industrial plants to teach the proper use of slings in overhead crane operation and review allied safety principles. Numerous visual aids will be used, including models of typical pieces of equipment that might pose lifting problems for a crane operator. All of the demonstration equipment, including backdrops and displays, has been designed so that it is transportable in a station wagon.

Talbot district manager for Boston Woven Hose

George J. Talbot, Jr., has been appointed district manager for the Boston Woven Hose & Rubber Co., Boston, Mass., in the New Orleans area. Mr. Talbot has had lengthy experience in industrial rubber products. His appointment is in connection with the sales expansion program established by Boston to more effectively serve customers in the territory.

Rogers to manufacture industrial locomotives

Rogers Brothers Corp., Albion, Pa., has announced its facilities for the custom designing and manufacture of diesel-hydraulic and diesel-electric locomotives in 5 to 40-ton sizes and track gauges from 21 to 56½ in. The locomotives are of modern design with cabs and main frames completely electrically welded.

Motorola regional manager

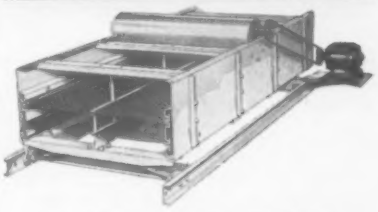
Hoyt Stout has been appointed regional sales manager in New Jersey, Delaware and southeastern Pennsylvania for Motorola Communications & Electronics, Inc., Chicago, Ill. Mr. Stout succeeds Wallace Miller who is now manager in New York State. Prior to his promotion, Mr. Stout was a zone manager in Pennsylvania.

New warehouse

Chain Belt Co., Milwaukee, Wis., has announced the opening of its new district sales office and warehouse in Cincinnati. Charles C. Pingry, district sales and warehouse manager, is in charge of the new facility. The warehouse contains modern facilities and services to serve the Ohio, Kentucky and Indiana region.

(Continued on following page)

FOR PROFITABLE SCREENING USE
UNIVERSALS



- FAST, SIMPLE, RUGGED
- DEPENDABLE
- ECONOMICAL
- STOCK DELIVERIES
- FAST SERVICE

Write today for free catalog No. 150 on screens and screening

UNIVERSAL VIBRATING SCREEN CO.
Racine, Wisconsin
Quality Screens Since 1919

Enter 1510 on Reader Card



RETARDED CHILDREN
CAN BE HELPED

MANUFACTURERS NEWS

(Continued from preceding page)

New sales headquarters

MASSEY-FERGUSON INDUSTRIAL DIVISION, Wichita, Kansas, has opened a Los Angeles branch and western regional sales headquarters devoted to its industrial equipment. The new headquarters is located at 3545 S. Yates Ave. and regionally covers the western half of the U.S., serving 11 branch and five sub-branch offices. Personnel includes: John J. Vilven, western regional industrial sales manager; John D. Luck, branch manager; Mahlon Poole, district manager; Robert M. Prescott, product technician, and Thomas V. Bowditch, distribution supervisor.

Also at Massey-Ferguson, Charles F. Hill has been appointed general manager of the Industrial Division, succeeding Charles J. Davis who has relinquished his responsibilities as general manager.

Mr. Davis will continue to be associated with the Industrial Division until present planning of programs to be applied in 1959 is completed. After that he will devote full time to other activities. Mr. Hill joined Massey-Harris Ltd., in 1952 and in 1957 was appointed general factory manager of the Massey-Ferguson plant in Racine, Wis.

Mine & Smelter holds international sales meeting

THE MINE AND SMELTER SUPPLY Co., Denver, Colo., recently held an international sales meeting in Denver. One of the main purposes of the meeting was to present complete details on the consolidation of its March Mill Division and the Colorado Iron Works Co. into the Manufacturing Division of Mine and Smelter, and make plans for coordinating sales throughout its international organization. The meeting also included a preview of new products and new developments in the present line of equipment.

Southern district manager

DON B. HOOSER has been appointed Southern district manager of the Cleveland Tramrail Division, The Cleveland Crane & Engineering Co., Wickliffe, Ohio, succeeding William P. Hanks who has been appointed Midwestern district manager.

Mr. Hooser formerly was associated with Cleveland Tramrail Texas Co., Dallas, and is familiar with the sales, application and servicing of Cleveland Tramrail equipment.

Chicago branch manager

KENNETH J. SCHULTZ has been appointed manager of the Chicago branch office of Baker Industrial Trucks, Cleveland, Ohio. Mr. Schultz joined the company in March, 1958, as sales district manager. Prior to that he was employed as transportation supervisor and representative for Allis-Chalmers in Harvey, Ill., and Cleveland. Mr. Schultz is a graduate of Loyola University.

GM Diesel expands line, adds production facilities

LOOKING TOWARD THE FUTURE, when there is expected to be more demand for both higher and lower horsepower diesel engines, Detroit Diesel Engine Division, General Motors Co., is making available a new line of diesel engines for all purposes. The line will give coverage of horsepower demands from 20 to 1,650.

Expansion of the line has made it necessary to add production facilities. About 300,000 sq. ft. of production space has been added to house a separate, fully automated production line for each of Series 53, 71 and 110 models.



...for FAST PRODUCTION

...for EASY, LOW-COST MAINTENANCE

What do you look for in an asphalt plant? Union Asphalt Materials Co., Inc., Ostrander, Ohio wanted the clean operation, oversize construction, maintenance economy, and the fast production and big tonnage output of the MADSEN Model 481. The MADSEN 6000-lb. plant shown above gives this successful contractor these MADSEN advantages...advantages that can pay-off in greater owner profits for years to come. Three of the outstanding MADSEN features which help provide these advantages are:

1. **Fast air-cylinder operation**—through conveniently located control console. Levers electrically energize solenoid-operated air valves for faster control of bin gates, weigh-box, mixing, asphalt injection, asphalt charging and dumping to truck.
2. **Oversize MADSEN Twin-Shaft Pug Mill Mixer**—for the ultimate in fast, thorough mixing. Curved bottom and center liners are externally removed and installed ... an easy 20-minute job per liner section for one man *without getting on the inside of mixer.*
3. **Triple discharge bin gates**—for livelier, more efficient bin action. Aggregates are withdrawn from each bin compartment through 3 openings. This MADSEN feature (patent pending) eliminates "coring out" and segregation—results in more uniform filling of the weigh-box.

MADSEN *Equipment that Serves.*

COMPLETE PARTS STOCK AVAILABLE IN LOS ANGELES AND LIMA, OHIO

This is only part of the story why successful operators select MADSEN. *Complete details on the* MADSEN *Model 481 4000-lb., 5000-lb. and 6000-lb. Asphalt Plants are shown in Bulletin 800-A. Ask your Distributor for your copy or write direct.*

MADSEN WORKS / Construction Equipment Division BALDWIN-LIMA-HAMILTON

14120 E. ROSECRANS AVE., P.O. BOX 38, LA MIRADA, CALIFORNIA
BALDWIN-LIMA-HAMILTON CORPORATION, LIMA, OHIO

Enter 1511 on Reader Card

Giant earthmover unveiled by LeTourneau



R. G. LeTourneau, Inc., Longview, Texas, has unveiled its first earthmover since the company left the earthmoving equipment business more than five years ago. The giant has a 70-ton work capacity. Electricity is generated by a 600-hp. Cummins diesel coupled to LeTourneau-built ac. and dc. generators. The machine is about 62 ft. long, 14 ft. wide and travels on wide-base tubeless tires at a speed of 20 mph. fully loaded. Fuel capacity is about 325 gal.

Form association to manufacture scales

Arrangements to manufacture scales have been completed by the Cardinal Scales Manufacturing Co., Webb City, Mo., and the L. R. Murphy Scale Co., Sacramento, Calif., utilizing the design, patents, and features of welded steel construction in heavy duty industrial and vehicle scales which were pioneered by the L. R. Murphy Scale Co.

A complete line of scales including industrial, built-in, hopper and railway track scales will be manufactured and assembled at the Cardinal Scale Mfg. Co. plant and will be marketed under the name of Murphy-Cardinal.

Todd made manager of Solvay distributor sales

Allied Chemical Corp., New York, N.Y., has announced the appointment of Harry C. Todd to the newly created post of manager of distributor sales for Solvay Process Division. William J. Cannon succeeds him as advertising manager.

Mr. Todd joined the company in 1927, and in 1946 was promoted to manager of advertising and sales promotion. Mr. Cannon joined Solvay's advertising department in 1954 after sixteen years of experience in the advertising field.

Garrity made sales manager

John J. Garrity, district sales representative for Yale & Towne Mfg. Co., Philadelphia, Pa., has been appointed district sales manager for northern California, northern Nevada, Utah and Hawaii, with headquarters in the plant at San Leandro, California.

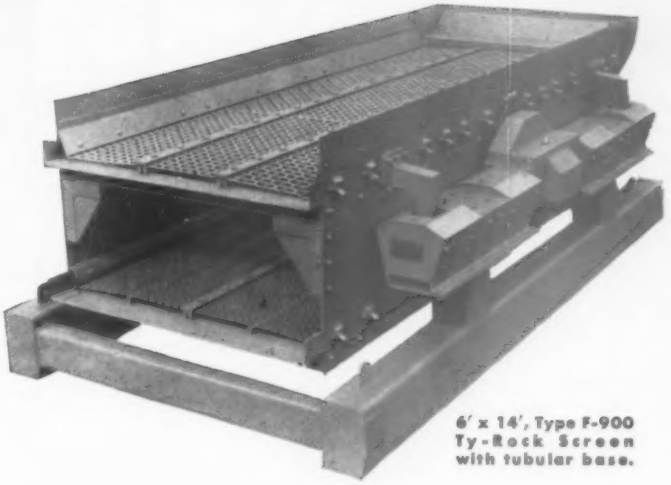
Beaver joins Buell

Charles E. Beaver has joined Buell Engineering Co., Inc., New York, N.Y., in a sales and marketing capacity. In 1925 Mr. Beaver started as an engineer in the technical department of the Research Corp., advancing to sales engineer and assistant sales manager. Later he became vice president of sales and a director of Research-Cottrell, Inc., the company's wholly owned subsidiary. Mr. Beaver is a graduate of Lafayette College.

Riley field representative

The Mission Manufacturing Co., Houston, Texas, has announced the appointment of Harold Riley as field representative for the Hammerdril with headquarters in Westchester, Pa. Mr. Riley formerly was in Mission's oil field sales organization and also has had extensive experience in field tool sales and service. **END**

TY-ROCK SCREENS



6' x 14', Type F-900 Ty-Rock Screen with tubular base.

For TOP Performance

The balanced circle-throw action of the Ty-Rock plus the full-floating action on large shear type resilient rubbers enables this screen to separate material with unequalled speed and effectiveness.

The Ty-Rock wastes no power in useless, harmful racking of buildings or supporting members. It delivers all of the intense power to the job of stratifying and separating the sizes.

Telephone **HE 1-5400** • *Teletype* **CV 586**

THE W. S. TYLER COMPANY
CLEVELAND 14, OHIO
Manufacturers of Woven Wire Screens and Screening Machinery

Enter 1509 on Reader Card



WHERE THERE'S BUSINESS ACTION THERE'S A BUSINESSPAPER

In any kind of racing—man, beast, or automotive—the "inside track" is the favored position.

Same holds true in the business race. But here the "inside track" means having more information—sounder information, more complete information, more timely information.

The astute businessman—the man on top and the man on the way up—gets that information from the businesspaper he subscribes to in his particular field. He reads for profit, not for pleasure. He searches for facts he needs to make decisions. For fresh ideas. For new methods. For new products he can put to work. He reads, in short, to get the "inside track" against competition.

And he finds much of what he wants and needs in the advertisements in his businesspaper. So, logically, he reads the advertising with the same scrutinizing care he devotes to the editorial pages.

Take a tip from the man on the move who wants to keep his job and his business *moving*—on the "inside track." Subscribe to your businesspaper. Read every issue. Carefully. Thoroughly. Searchingly.

Rock Products
THE INDUSTRY'S RECOGNIZED AUTHORITY
MACLEAN-HUNTER PUBLISHING CORPORATION
79 West Monroe Street Chicago 3, Illinois

One of a series of advertisements prepared by THE ASSOCIATED BUSINESS PUBLICATIONS

WHERE TO BUY

Rock Products Classified Advertising
—Where to Buy—

Mail to: **ROCK PRODUCTS**, Where To Buy Dept.,
79 West Monroe St., Chicago 3, Illinois

DATE_____

ADVERTISER_____

BY_____

ADDRESS_____

CITY, ZONE & STATE_____

Remittance Enclosed
Terms: 10 days after receipt of invoice

RATES FOR ONE INSERTION

Column Inches Used	Rate Per Column Inch
1- 3	$9.00
4- 8	8.60
9-14	8.40
15-19	8.20
20-30	7.80

Lower rates on a contract basis. Write for rate card.

Forms close 12th of Month Preceding Publication

ATTACHED COPY to appear in issue(s) checked

Jan. . . . . July . . . . .
Feb. . . . . Aug. . . . .
Mar. . . . . Sept. . . . .
Apr. . . . . Oct. . . . . .
May . . . . . Nov. . . . .
June . . . . . Dec. . . . . .

BLIND ADVERTISEMENTS

Box Numbers will be assigned to ads without extra charge, if the advertiser desires. Inquiries should be sent to the Box Number c/o Rock Products, 79 W. Monroe St., Chicago 3, Ill. They are forwarded daily to the advertiser. Rock Products cannot disclose advertisers' name or answer inquiries.

$4,500,000 LIQUIDATION

TITANIUM DIOXIDE PLANT

Broening Highway - Baltimore, Md.

Telephone: MEdford 3-2911

1—Traylor 11' x 155' Rotary Kiln, 2 tires, welded, ⅞" shell.
1—Vulcan 8' x 125' Rotary Kiln, 2 tires, ¾" shell.
2—Vulcan 8' x 50' Rotary Kilns, 2 tires, welded, ⅞" shell.
2—Vulcan 6' x 60' Rotary Kilns, 2 tires, ¾" shell.
1—Traylor 5' x 50' Rotary Dryer, 2 tires, welded.
1—Raymond No. 5057 Five Roll High Side Mill, Double Whizzer.
2—Abbe 5' x 16' Ball Mills.
4—Mikro Pulverizers, 3TH, 2TH.
5—Worthington, I.R., Compressors; 1000, 500 & 300 cfm.
2—Aurora 24" Vertical Centrifugal Pumps, 200 HP motors, 5000 gpm, 125' head.
1—Byron Jackson Deep Well Pump, 75 HP Vertical Motor.
8—Dorr Thickener Mechanisms; 50', 40', and 16'.

Steel Buildings; 20 ton Overhead Cranes; Bemis 50 lb. Bag Packer with Sewing Machine; Bucket Elevators 65 to 125 ft. high; Redler Conveyors 5" and 10"; Screw Conveyors 6" and 9", etc.

PARTIAL LIST OF VALUES SEND FOR CIRCULAR

REPRESENTATIVE ON PREMISES FOR INSPECTION

BRILL EQUIPMENT COMPANY

2401 Third Avenue, New York 51, N.Y. Tel: CYpress 2-5703

CRUSHERS

CONE, Symons 7' Super Standard
CONE, Symons 3', Portable
GYRATORY, Kennedy, 49, 38½, 37½
JAW, Mitchell, 18" x 9", 25 HP
JAW, Bacon 20" x 6"
DOUBLE ROLL, Gruendler, 24" x 24", 20 HP
RING ROLL, Sturtevant, 14" x 9½"
BABCOCK & WILCOX Type E32, 75 HP
RAYMOND, 6 Roll, Low Side, 200 HP
RAYMOND, 3 Roll, #3036 hi-side
HAMMERMILL, PENNA. CRUSHER #5060, Series #DNC, 400 HP, non-clog, 1952—UNUSED.

DRYERS & KILNS

11' x 155' Traylor Kiln, ¾", Shell.
9' x 130', ⅞" shell, 2-tire
8' x 170' kilns.
8' x 125' Vulcan Kiln, ¾" shell
8' x 115' Long—½" shell, 2 tires.
8' x 50' Traylor Kiln
7' x 120' kilns, 3 tires.
6' x 60' Vulcan Kiln, ⅝"
8' dia. x 70' L, Ruggles Coles, Double. Shell, Indirect-Direct heat, ½" shell.
5'6" dia. x 50', Renneburg, ⅜" shell.
6' x 50', Louisville, Steam Tube.
5'6" x 30', ⅜" thick Shell.
4'8" x 33', ⅜" thick Shell.
4' x 24' L, 5 HP, brick lined kiln.

MILLS

CONICAL BALL, Hardinge 4'6" x 16", 25 HP
COMPEB, Allis Ch., 7' x 24', 450 HP
BALL, Scrubber, Hardinge 8' x 48"
BALL TUBE, Allis, 5'6" x 22, 150 HP
BALL, Denver 4' x 10', 60 HP
BALL, Marcy No. 64½, 125 HP
ROD, Kennedy V-S, 5' x 10', 3" liners
ROD, Marcy 7' x 15', 300 HP (4" liners)

MISCELLANEOUS

BRIQUETTING PRESSES, Komarek Greaves, 75 HP, 50 HP, 10 HP
PUG MILLS, 25, 50, 150 HP
STEEL BINS—up to 200 tons storage, all welded construction
5000'—All steel through belt conveyor, 16" & 24" rubber belts
ALSO—Steel Trough—Belt Conveyors, Bucket Elevators, Steel Screw & Flight Conveyor, etc.

PERRY EQUIPMENT CORPORATION

1418 N. Sixth St. Phila. 22, Pa.

POplar 3-3505

1—13" x 30" Type B Farrel Bacon Jaw Crusher
1—#5 Champion Good Roads Jaw Crusher, 12" x 26"
1—10" x 20" Allis-Chalmers Blake Type Crusher
1—36" Telsmith Gyrasphere Crusher plus many repair parts
1—3' x 8' Hardinge Rod Mill & spare liners
1—3' x 8' Hardinge Ball Mill
1—14" x 20" American Hammer Mill with manganese liners & 5 sets hammers.
1—36" x 20' Revolving Screen
1—36" x 11' Revolving Screen with Scrubber
1—30" x 14' Revolving Screen
1—3' x 5' Link-Belt Foundry Shakeout Screen
New All-Steel & Manganese J. & H. Hammer Mills 5½" x 18"
Large stock chain, sprockets, buckets and conveyor pulleys—new and used.

JOHNSON & HOEHLER, INC.

P. O. Box 152, Lansdowne, Pa.

4—6 x 14 **SIMPLICITY VIBRATING FEEDERS.**
Complete **HYDRATED LIME PLANT** 50 tons/day.
#7 Stearns **BLOCK PLANT** 4", 8" & 12" blocks.
35—Link Belt 10" **SCREW CONVEYORS**
10½ ft. Barber Greene model 848 **ASPHALT PLANT** complete with all accessories and paver.
Two—54-B electric **SHOVELS**, each $26,500
Lima 802 **SHOVEL**, new 1948, parts $24,250
Koehring 605 **SHOVEL** new 1946, parts $19,350
37-B **SHOVEL-DRAGLINE** new 1936, with an extra D-13000 engine included ....$ 8,950
N. W. 25 **SHOVEL-CRANE**, new 1948 ..$11,500
Crushers: jaw; cone; gyratory; roll; hammermill; impactor; ball, rod & tube mills; screening, crushing & washing plants—Classifiers—Compressors—Conveyors—Cranes—Drills—Dump Cars—Dredges—Engines & Motors—Feeders—Generators—Hoists—Kilns & Dryers—Locomotives—Pumps—Screens—Shovels & Draglines—Transformers—Euclid Trucks.

STANLEY B. TROYER EQUIP. CO.

Box 97 Phone 500 Crosby, Minnesota

WHERE TO BUY

QUARRY EQUIPMENT

Cedarapids 3042 double impeller. Rebuilt
Cedarapids 3033 Hammermill with new components.
Cedarapids 3033 Hammermill secondary plant on rubber.
Cedarapids 2036 Primary Crushing Plant
Cedarapids 1336 Twin Jaw Crusher. Excellent.
Cedarapids 1236 Twin Jaw Portable Plant.
Telsmith 13 B gyratory crusher.
Scottdale model 63 double roll coal crusher.
26" x 8'4" apron feeder with drive.
Robins 4' x 9' triple deck screen.
New Holland 6' x 12' double deck screen. Rebuilt
Pioneer 4' x 8' double deck screen. Rebuilt
27½ ton, single-compartment 8' x 12' bin.
2—Eagle 36" x 20' Double Log Washers. Good.
Wemco 24" x 13' Sand Preparation Machine. Good.
60-ton, two-compartment, 8' x 18' storage bin with slam gates.
100-ton, two compartment, 13' x 23' bin
Special bins to your specifications.
Conveyors—18"—24"—30"—36". Also conveyor belting.

SHOVELS AND CRANES

Lorain L-820, 2-yd. Diesel Shovel-Crane.
P & H 855B-LC, 2-yd. diesel dragline.
P & H 655B1½ yd. diesel dragline reconditioned.
Lorain L-79, 1½-yd. diesel shovel rebuilt.
Bucyrus-Erie 38B, 1½-yd. Diesel Dragline. Rebuilt.
Lorain L-41 ¾-yd. diesel backhoe reconditioned.
Lorain L-60K, 1-yd. Diesel Crane. Excellent.
Lorain L-20, ⅜-yd. Diesel Dragline. Excellent.
2—Lorain L-26, ¾-yd. Diesel Backhoes. Excellent.
Lima 34 Paymaster ¾-yard diesel shovel. Good
Unit 1020 ¾-yard diesel powered shovel-crane
Koehring 304 ¾-yd. diesel shovel.
Koehring 304 ¾-yd. diesel backhoe
Wayne 50B, 25-ton truck crane. 18 mos. old.
Unit 614, ½-yd. Diesel Backhoe.
Lorain TL-20, ½-yd. Diesel Backhoe.
Lorain MC-414 20-ton Moto-Crane reconditioned.
Link Belt HC-80 25-ton truck crane
Lorain MC-504W 25-ton Moto-Crane.
Lorain MC-4 15-ton Moto-Crane.
Lorain TL-30 10-ton gas Moto-crane.
Lorain SP-107, 7-ton self-propelled crane

TRACTORS, TRUCKS, SCRAPERS, ETC.

4—Euclid TS-24 Twin Engine Scrapers.
2—Euclid TS-18 twin engine scrapers.
4—Euclid 18-yd. overhung engine scrapers.
3—Euclid 12-yd. overhung engine scrapers.
3—Euclid 7-yd. overhung engine scraper.
1—Euclid 15½-yd. six wheel scrapers.
2—Euclid 13-yd. bottom dumps. Good.
2—Euclid TC-13 twin engine tractors.
1—Euclid 18FD, 18-ton rear dump.
1—Mack LR8 15-ton rear dump. Rebuilt
1—Fullman S-600. 6 to 8 yard scraper.
1—Caterpillar DW-10 hydraulic scraper.
1—International TD-14A tractor with PCU
1—International TD 18 with cable bulldozer blade.
1—Euclid tractor with 3200 gallon water tank semitrailer.
1—Caterpillar D-7 with cable bulldozer blade.
1—Cat. D-7 with Hydraulic Angledoser Blade.
1—Cat. D-6 with hydraulic angledoser blade.
1—Caterpillar D-4 Tractor only
1—Internat'l. 300 tractor, with loader backhoe.
1—Allis-Chalmers HD-19 tractor with cable bulldozer blade.
1—LaPlante choate 13½-yd. Cable scraper
1—Atco H85, 10½-yd. Hydraulic scraper
1—Hough HMO gas front end loader. Reconditioned.

SHOVEL ATTACHMENTS

Lorain 50, 1-yd., 21' boom, 17' stick
Lorain 30A, ½-yd., 16' boom, 13'4" stick.
Osgood 903, 2-yd., 24' boom, 20'6" stick.

BACKHOE ATTACHMENTS

Lorain 40A, 18' boom, 7' stick, 28", 36" or 44" bucket.

DIESEL POWER UNITS

Cat. D7700, 74 H.P. at 1000 RPM. Rebuilt
Cat. D8800, 88 H.P. at 1000 RPM.
Cat. D13000, 128 H.P. at 1000 RPM. Rebuilt.
GMC Twin Diesel, rebuilt.
GMC 3031C, 3-cylinder. new.

AIR COMPRESSORS

105 cu. ft. LeRoi tractair with dozer, backhoe
4—125 cu. ft. Gardner-Denver Gas Portables.
125 cu. ft. Jaeger gas portable.
210 cu. ft. Schramm gas portable.
210 cu. ft. Schramm Diesel Portable.
315 cu. ft. Schramm gas portable.
500 cu. ft. Ingersoll-Rand. Waukesha power
4—600 cu. ft. Gardner-Denver diesel portables.

L. B. SMITH, INC.
Camp Hill, Pa.
Phone Harrisburg REgent 7-3431

SPECIAL ITEMS

C-R 5530 Twin roll, 200 HP elec. motor.
Package type steam boilers for winter concr. mixing.
Iowa 53"x60" dbl. Impact hammermill
Sturtevant 16" air separator 75 HP elec. motor
Pangborn CH-2, exhaust blower, etc.
Traylor 36"x72" sectional frame jaw crusher
Traylor 4' Model TY crusher. Numerous spare parts.
Symons 4¼' cone crusher, std. head coarse bowl

CONCRETE MIXERS

Ransome Model 84S, 3 yd. tilting type
Smith 42Z, 4 yd. tilting type
Koehring 56S 2 yd non tilting type

TRUCKS—TRANSIT MIXERS

15 Ford F8-6 yd. end dump. Excel. Reinforced, 1955
10 Mack LRSW 32 ton rear dump trucks Cummins NHIRS-600 300 HP Diesel Motor Allison converter-transmission.
6 Euclid 36 TD end dumps 300 HP Cummins Diesel
2 Int. LF-192 Blaw Knox 6½ yd. 1953.
6 Smith tan. ax. Diesel, 1953, 5½ yd. mixing
4 Smith tan. ax. 4½ yd. mixing

CRUSHERS—KILNS—DRYERS

JAW: Acme 10x20, 15x36, 14x26, 14x28, 10x42, 16x32, 18x32, 25x10. Eagle 10x16, 20x36. Diamond 24x36". Cedar Rapids 10x20, 15x36, 20x36, 25x40. Farrell 10x20, 18x30, 14x36, 18x36, 36x48. Buchanan Type C 30x42, 36x42. Traylor 18x36, 24x36. Allis-Chalmers 30x18. Good Roads 16x30. Telsmith 18x32. Universal 18x24.
GYRATORY: Al-Chal 6, 7½, 8, 9, 10, 12, 16, 18, 20". Telsmith TY 4', 3' Gyrosphere
25B Kennedy Van Saun 12, 37½, 38, 49¼"
ROLL: Cedar Rapids 40x20, Pioneer 40x22, 30x18, 54x24 triple roll; Telsmith 24x16.
HAMMERMILL: Jeffrey Type B3 24x20, Type B 36x24, 36x36, 36x42, Eagle 24x24, Stedman 24x30, 36", 42". Cedar-Rapids 50-50, 30x33.
BALL MILL: Hardinge conical 10'x48", 8'x18". 8'x36", complete, motors, Traylor 7'x35'.
TUBE MILLS: Smidth 6'6"x21', 5½x20'.
ROD MILL: Marcy 3'x8' center discharge, 5x12, 8'x6', 8½x12' center discharge.
AUTOCLAVES: J-&C 6'6"x58" Quick Acting; 6'x50'
CONE: Symons 3', 4¼', 7'.
KILNS: 4'x42', 5'x30', 6'x50'6", 6'4"x45', 6'x72' Vulcan 9x100, 10'6"x105', 8'x124', 6'x90', 6'x72'.
DRYERS: 6'x60', 6'x72', 5'x24', 4'6"x32', 3'6"x20', 6'x30', 5'x35' rotary current.
COMPEB MILLS: A-C 7'x24', Patterson 7x18.
FEEDERS: Synstron F55 48x72", 48x60", Jeffrey 35x72". Telsmith 36"x14', Universal 36"x32'.

CRUSHING—WASHING—CLASSIFIER PLANTS

Diamond Model 77 All American Port. Crushing-Screening; 1956.
Pioneer Port. 10x24 jaw 24x16 roll compl. Diesel
C-R 2540 Prim. Port. Diesel
A-W 61E 1024-10C6 jaw crusher
C-R Primary Port. 22x36 Jaw. Diesel.
Eagle 36x25" single screwspiral etc.
Lippman Port. **WASHMORE** washing plant, 36"x 16" sand classifier, 48"x72" revolv. scrubber etc.
Telsmith 60"x9' gravel or stone super scrubber, complete 40 HP motor
Telsmith Twin Screw sand classifier 20"x15'
Eagle 24"x25' dbl. screw washer 15 HP motor

CONCRETE PLANTS AND EQUIPMENT

Noble CA 154 Semi-automatic 150 ton 4 compt. aggregate bulk cement silo 2000 cu. ft.
Eric Strayer port. New 1955, 40 yds. per hr. 600 bbl. cement silo
Johnson 400 yd 5 aggr. 1500 bbls. cement batch 5000 bbl. silo 3-2 yd mixers
Johnson automatic batch 10,000 bbls. cement storage 2-2 yd mixers; screening equipment.
Johnson TY 228 2 compt. agg. w/TY1320 cement unit
Johnson 300 bbl. cement bin w/hopper scales.
Johnson TY-227 70 cu. yd. 105 ton 3 compt. aggr. bin TY168 batcher.
Blaw-Knox BCPC 600 bbl cement silo
B-K BCPC 400 bbl High cement bin 400 bbl silo.
Blaw-Knox BCPC 300 bbl cement bin
B-K 3 Comp. 200 yd. ag. bin, cement silo 3000 bbls., 2 Koehring 56-S mixers, charging cement hopper 144 bbls.
B-K 2 aggr. one cement 400 bbl silo. Complete

HYDRAULIC SUCTION DREDGES

Morris 6" Diesel on 14'x36' hull
Ga. Iron Works 8" suc. 6" disc. Diesel New 1957.
10" Portable Diesel powered. Complete.
12" Diesel powered, pontoon mounted. Complete.
Ellicott 8" with cutter. Diesel Hull 48'x18'x3'6"
8" Hydraulic Diesel. On 32'x8' steel pontoons
6" portable Diesel complete with cutters, etc.

SCREENS

Trommel 6'x45'3" 75 HP gearhead A.C. motor.
New Holland 4'x12' 2 deck, V-belt drive
Tyler-Hummer 4'x10' 2 deck, new spare parts
Simplicity 5'x12' 2 deck
Pioneer 5'x12' 2 deck 20 HP elec. motor
C-R 4'x14' 2 deck 25 HP motor

RICHARD P. WALSH CO.
30 Church St. New York 7, N. Y.
CO 7-0723 Cable: RICHWALSH

FOR SALE OR RENT

80 Ton GE Diesel Elec. Loco. New '50.
65 Ton Whitcomb Diesel Elec. Loco.
44 Ton Gen. Elec. Diesel Elec. Loco.
25 Ton Whitcomb Diesel Elec. Loco.
50 Ton American Guy Derrick 115' Mast 100' Boom
90 HP Lidgerwood 2d Diesel Hoist.
30 Ton Browning Diesel Loco. Crane
2 Yard Manitowoc 3000-B Crane. Cummins Diesel. New 1951.
2½ Yd. Link-Belt K-595 Crane 120' Boom.
600 CFM I-R Port. Rotary Compressor

WHISLER EQUIPMENT CO.
1905 Railway Exchange Bldg., St. Louis 1, Mo.
CHestnut 1-4474

OUR 51ST YEAR

Jeffrey Type A Hammermill 24" x 18".
American 13SC Hammermill, 25 HP West.
Climax 10x20 Jaw Crusher 25 HP Motor.
Farrel 10x4 "C" Jaw Crusher w/motor.
Cedar Rapids 14x36 Overhead Ecc. Jaw Crusher, Bronze Bearings.
Colorado 20" x 12" Double Roll Crusher.
New England 14" x 28" Jaw Crusher.
Sturtevant #1½ Rotary Crusher.
Robins 18x24 Double Roll Crusher, Knobs.
Single Roll Coal Crusher, 24" D. x 30" F.
Reliance Jaw Crusher 9" x 16"
Acme Jaw Crusher 9" x 16"
25 Yd. Cedar Rapids Secondary Portable Crushing Plant.
Niagara 1-Deck Screen 2½' x 12'
Hummer 1-Deck Screen 6' x 5'
Hummer 2-Deck Screen 3' x 4' Encl.
New Universal 1-Deck Screen 3' x 5'
New Universal 1-Deck Screen 3' x 8'
Seco 3½ Deck Screen 3' x 8'
Revolving Screen 30" x 19' lg. 4 sizes.
Revolving Screen 48" x 20', trunnions.
Telsmith Ajax Gravel Washer, 40" dia.
Small Dust Elevators for Asphalt Plants, 5" and 6" Buckets.
Asphalt Dryer, 4' x 35', Complete.
Sturtevant 20 HP Positive Pressure Blower.
Steel Grating for Walkways, 95% New.
25, 30, 40 and 50 H.P. Motors.
50 H.P. 100 R.P.M. Gear Motors
Conveyor Idlers—All Sizes and Makes.

G. A. UNVERZAGT & SONS INC.
136 Coit Street Irvington 11, N. J.
Essex 3-8105

CEDARAPIDS Super Rock-It Portable Crushing & Screening Plant w/32x25 rb. Jaw, apron feeder, 3033 hammermill, 4x10 screen, rotovator, two delivery conveyors, Twin 671 GMC diesel power units, tandem rubber, excellent. Capacity 75-100 tph producing 1" minus. Late model, less ½ new cost. $29,500 Terms $1250/mo. Yard.

UNIVERSAL 20x36 rb. Jaw Portable Primary w/apron feeder, conveyor, Cat. diesel, tandem rubber. Secondary Cedarapids 4033 Hammermill Portable Plant w/4x12 screen, rotovator, conveyors, twin 671 GMC diesel on tandem rubber. Good. $42,500.00 Terms $1500/mo.

CEDARAPIDS 4033 Hammermill Portable Secondary Plant w/4x12 screen, rotovator, conveyors, tandem rubber, Twin 671 diesel. Good. $27,500 Terms.

CEDARAPIDS 20x36 rb. Jaw Crusher, new bearings, excellent. $5850 Yard.

GILSON 30x28 hammermill, extra hammers, good. $1250 Yard.

SIMPLICITY 4x10 2-deck DE Rip-Rap Scalping Screen, hvy. duty, good. $2250.

CEDARAPIDS 42"x10' apron feeder with hopper, stand, clutch, very good. $2500.

OSGOOD 820 Shovel-Dragline-Crane-Backhoe, 1½ cy., new 1953, govt. machine used only 1600 hrs., like new. With Cat. D13000 diesel, air control, torque converter, high gantry. Bargain. $24,000 choice of attachment. Yard. Terms $1000/mo.

KOEHRING 1005 Shovel, new 1948, Buda diesel, 2½ cy., good shape. $22,500.

LIMA 1201 Shovel #4523, air controlled, 3 cy., good. $22,500 W. Va.

BUCYRUS ERIE 22B Electric Mine Shovel, 1 cy., new 1953, rebuilt like new. $12,500 Yard.

SHOVEL ATTACHMENTS for P&H 255A, new. $1000 Unit 1020A, new. $1250 Bucyrus Erie 22B, new. $1500 Koehring 205, complete, good. $600 P&H 655A, good. $1850 Yard. OSGOOD 810 complete, good. $2500.

P&H 655 Shovel Buckets, 1½ cy., complete, new. Bargain. $950 Yard.

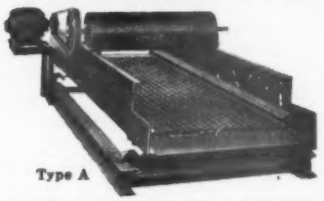
DAVEY 210 cfm Diesel Portable Compressors, late model, rubber tires, rebuilt. $2250 Yard. Rent $200/mo. apply purchase.

WENZEL MACHY. CO.
565 S. 10th, Kansas City, Kans., Mayfair 11710

BONDED QUALITY BARGAINS

NEW CURRENT MODELS - IMMEDIATE SHIPMENT FROM OUR FACTORY - WRITE, WIRE OR PHONE FOR FREE CATALOG AND PRICES

BONDED® GENERAL DUTY AND HEAVY DUTY VIBRATING SCREENS



Type A



Type B

For mineral, chemical and other industrial products. **Fast, efficient and economical for cleaning, sizing, grading, dewatering.** Made in all metals, including stainless steel. Enclosed models for hot materials or dust control. Bonded screens are built for any screening operation, wet or dry.

PERFECT BALANCE AND SHARP ACTION. Eccentric weight mechanism, spring mounted. 1 to 3 decks, 2′ x 4′ to 3′ x 6′. **WRITE FOR "SEVEN SECRETS OF SUCCESSFUL SCREENING" IN BULLETIN NO. 1086.**

Model Number	Screening Area	No. of Decks	Sale Price
124A	2′x4′	1	$ 443
224A	2′x4′	2	472
126A	2′x6′	1	472
226A	2′x6′	2	501
134A	3′x4′	1	504
234A	3′x4′	2	570
136A	3′x6′	1	551
236A	3′x6′	2	688
336A	3′x6′	3	956
138A	3′x8′	1	675
238A	3′x8′	2	815
338A	3′x8′	3	996

FACTORY BALANCED, CONTROLLED VIBRATION. Four bearing positive throw eccentric shaft; 3′ x 6′ to 5′ x 14′. 1 to 5 decks. **WRITE FOR BULLETIN NO. 1087 AND 9 REASONS WHY BONDED IS YOUR BEST BUY.**

Model Number	Screening Area	No. of Decks	Sale Price
336B	3′x6′	3	$1620
436B	3′x6′	4	1685
138B	3′x8′	1	1510
238B	3′x8′	2	1620
338B	3′x8′	3	1735
248B	4′x8′	2	2310
348B	4′x8′	3	2440
2410B	4′x10′	2	2490
3410B	4′x10′	3	2550
2412B	4′x12′	2	2590
3412B	4′x12′	3	2970
4412B	4′x12′	4	3165

BONDED® TROUGHING IDLER CONVEYOR BARGAINS



Remember, You Save Up To 50%

CONVEYOR PRICES INCLUDE BELTING

Complete Pre-Fab sections of 8" Jones & Laughlin Jr. I Beam Frame Conveyors quickly and easily joined together on the job. These beams are rolled with .20% Copper Content. Atmospheric exposure tests disclose that Junior Beams, with .20% Copper have as much as four times the resistance to corrosion as non-copper steels. Braced with structural angle, welded to frame for maximum rigidity. Equipped with 5" roll diameter idlers and return rolls, 20" diameter head pulley and 16" diameter tail pulley, mounted on 2¼" or 2⅞" diameter shaft.

We take our loss on our stock of short length belting. You can save as much as 50% on BONDED CONVEYOR SPECIALS, with conveyor belting in two pieces. Belt is new 4-ply, 28 oz. duck, ⅛" top rubber cover x 1/32" bottom cover Major grade belt and is Fresh Stock made by leading manufacturers. **WRITE FOR BULLETIN #1138.**

Bonded troughing idler conveyors also available in Truss Frame Construction. **WRITE FOR BULLETIN #1189 AND PRICES.**

Belt Width	Length of Conveyor	List Price	Sale Price	Add or Deduct Per Ft.
14"	25′	$1397	$ 722	
14"	50′	2222	1144	$16.84
14"	86′	3377	1733	
16"	20′	1262	636	
16"	45′	2137	1088	
16"	60′	2662	1359	18.04
16"	90′	3712	1900	
18"	25′	1477	794	
18"	45′	2217	1166	
18"	70′	3142	1648	
18"	85′	3697	1933	19.24
18"	100′	4252	2220	
18"	130′	5362	2797	
20"	25′	1517	826	
20"	60′	2882	1533	
20"	75′	3467	1838	20.37
20"	90′	4052	2145	
24"	25′	1590	898	
24"	45′	2436	1336	
24"	70′	3480	1875	
24"	100′	4740	2514	21.78
24"	120′	5580	2950	
24"	150′	6840	3602	
30"	50′	2911	1617	
30"	70′	3871	2119	24.75
30"	90′	4831	2614	
36"	25′	1818	1118	
36"	45′	2858	1672	
36"	60′	3638	2096	27.95
36"	100′	5718	3214	

BONDED HDF SERIES HEAVY DUTY AND PAN FEEDERS

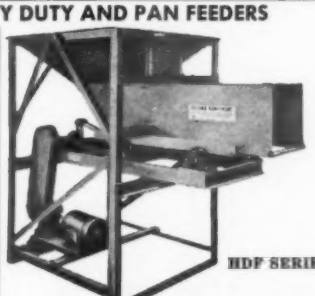


EF SERIES Capacities to 60 TPH

Bonded EF Series Economy Feeders are ideal for confined spaces and in portable plants. For medium duty service. Available with or without hoppers. **Priced From $224.00**

Bonded HDF-18 Heavy Duty Feeders were especially designed for abrasive materials such as Ore, Rock, Crushed Stone, Gravel, Sand, Clinkers, Abrasive Volcanic Ash and Rock. Abrasion Resistant Alloy Steel Plate is used for all parts that contact the material. Capacities to 440 Tons Per Hour.

HDF Series Plate Feeder - Priced From $925.00



HDF SERIES

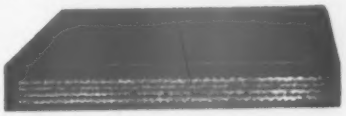
Capacities to 440 Tons Per Hour

WRITE FOR BULLETIN No. 1211

BUY WITH CONFIDENCE. References are: Ohio National Bank, Columbus, Ohio, Dun and Bradstreet, and more than 7,000 mines and quarries using Bonded equipment.

NEW CONVEYOR BELTING AT NEW LOW PRICES SAVE UP TO 34%

WE PAY FREIGHT ON 200 POUNDS OR OVER



QUALITY TESTED CONVEYOR BELTING*

Major Brand: 12# to 15# Average Friction Pull. 800# to 1000# Average Cover Tensile.

Heavy Duty 4-ply, 28-oz. duck, ⅛" top rubber cover x 1/32" bottom rubber cover belting having high tensile strength, tough cotton duck, strong carcass and proper flexibility. For heavy boxes, bags and bulk materials. Troughs easily. Famous brands at deep cut prices. Fresh stocks.

Width	Ply	List Price	Sale Price
14"	4	$3.63 ft.	$2.63 ft.
16"	4	4.08 ft.	2.77 ft.
18"	4	4.51 ft.	3.06 ft.
20"	4	4.97 ft.	3.54 ft.
24"	4	5.85 ft.	3.97 ft.
30"	4	7.18 ft.	4.85 ft.
36"	4	8.51 ft.	5.76 ft.

Major Bee Brand: 16# to 19# Average Friction Pull, 2500# to 3000# Average Cover Tensile. Skim coat between plies.

A high grade of heavy duty 4 and 5-ply, 28 oz. duck, ⅛" top rubber cover x 1/32" bottom rubber cover. These belts are for more severe service, high tonnages and abrasion resistance. For handling stone, mineral ores, concrete, cement, coal, and other similar materials, both wet and dry. Belts have molded rubber edges.

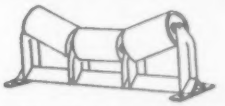
Width	Ply	List Price	Sale Price
14"	4	$ 4.81 ft.	$2.85 ft.
16"	4	4.85 ft.	3.22 ft.
18"	4	5.39 ft.	3.57 ft.
20"	4	5.90 ft.	4.07 ft.
24"	4	6.94 ft.	4.66 ft.
30"	4	8.53 ft.	5.66 ft.
36"	4	10.09 ft.	6.84 ft.
24"	5	8.14 ft.	5.38 ft.

***All belting is tested by the Engineering laboratory of one of the largest universities in the United States. It is guaranteed to meet or exceed listed specifications.**

Other widths, plies, duck weights and cover thickness available at low prices.

WRITE FOR FREE SAMPLE & BULL. #1200

IDLERS AND RETURN ROLLS SAVE 25% AND MORE



3-roll, 5" diameter Troughing Idlers for:			
14" belt	$18.50	24" belt	$21.25
16" belt	19.25	30" belt	22.00
18" belt	20.50	36" belt	22.75
20" belt	20.75	48" belt	25.50

1-roll, 5" diameter Return Idlers for:			
14" belt	$7.25	24" belt	$ 8.50
16" belt	7.50	30" belt	9.50
18" belt	8.00	36" belt	10.00
20" belt	8.25	48" belt	11.50

All steel. Interchangeable with other well-known makes. Furnished with replaceable prelubricated sealed ball bearings. Maintenance is negligible. WRITE FOR BULLETIN #1138.

BONDED SCALE AND MACHINE COMPANY

PHONE Days: Hickory 4-2186 — **WRITE FOR FREE CATALOG AND PRICES** — **PHONE Evenings: AX. 1-2213, HU. 6-3156**

128 Bellevue — **Mfrs. of Scales, Conveyors, Conveyor Parts, Idlers, Vibrating Screens, Crushers and Feeders** — **COLUMBUS 7, OHIO**

FOR SALE

Caterpillar D-8 LeTourneau Tractor, 12 yd. struck, 15 yd. heaped capy. Scraper Pan outfit $4,500.00

Stationary Diesel Generator Set, Fairbanks-Morse, 3 ph., 60 cycle, 480 volts, 72 K.W.—Engine 32E14 x 17 ..... $ Offer

Diesel Engines: Fairbanks-Morse, 180 HP @ 257 RPM, Style VA, Model 32E14 x 17 $ Offer
Also 25 HP @ 325 RPM Horizontal Style HB Engine ... $ Offer

Water Pump, 10" Centrifugal for belt drive, 3000 GPM @ 60 ft. hd, Frederick Iron & Steel Co. ..... $ 950.00

Scraper, Garwood, Model 25, 3.7 yd. struck, 5 yd. heaped capy. ..... $ 500.00

Pulverizer, Jeffrey, 24" x 18", Size A ..... $ Offer

Bagging Machine, St. Regis 100-LS—New—Never Used. Motor, Howe Scale and feeder $3,350.00
Today's cost would be—$4494.00

Jaw Crusher, Acme, 6" x 18", Style A, #9 ..... $ 750.00

Ball Mill, 5' x 22', F. L. Smidth, With gears and trunnion bearings $1,200.00

Hoist, single drum, Ledgerwood, 32" x 24" dia. drum ..... $ Offer

Dry Pan, Crossley, 7' dia. $ 850.00

Dry Pan, Crossley, 9' dia. ... $1,050.00

Clamshell Buckets, 1 and 2 yd. $ Offer

Orange Peel Bucket, 1 yd. ... $ Offer

Shafting, 4½" dia. ..... $ .05 Lb

Motors, 2 and 3 phase, to 40 HP, open sleeve bearing ... $ 6.00 Per HP

Conveyor Belting, 24" and 30" $ Offer

Screen wire, 2 to 40 mesh ... $ Offer

Speedmullor, Beardsley—Piper, Model 70 with rubber lined bowl and 100 HP motor .... $ Offer

Northwest models 4 and 104 shovel booms, dipper sticks (new and used), buckets (new and used), track pads and boom sheaves, mostly new ..... $ Offer

Flat pulleys, 2 inches to 6 ft. dia. ..... $ .05 Lb.

Sprockets, all sizes ..... $ .05 Lb.

Two tons of D-8 Caterpillar parts for tracks and final drives —New ..... $ Offer

Tank, 6300 gals. ..... $ 600.00

SUBJECT TO PRIOR SALE

GEORGE F. PETTINOS, INC.
P. O. BOX 27, Millville, N. J.
Located on Route #555
Silver Run Road
TAylor 5-0930

ELEC. AIR COMPRESSORS
1—3876', 1—1578' and 2—1098' Inger. Rand
DIESEL ELEC. LOCOMOTIVES
4—65 ton Whitcomb 2—25 ton & 1—70 Ton
2—45 ton & 1—80 ton & 4—100 ton Gen. Elec.
ROTARY DRYERS & KILNS
36" x 20', 5' x 25', 6' x 72', 9' x 125',
5'x35' Ruggles-Coles XA-8 Dbl. Shell, Comp.
33" x 18' Rotary Kiln W/Drive & Burner
REDUCTION MILLS & FEEDERS
5' x 22" Hardinge Ball W/Air Class. Comp.
4' x 8', 6'6" x 14'6" & 8'6" x 12' Rod Mills
5' x 10' Kennedy-Van Saun Rod Mill
1—5'x22" Hardinge Ball Mill with Air Classifying Equipment.
2—No. 77 & 1—96 Marcy Ball Mills
4¼' Symons Std. Cone Crusher
30" x 42" & 24" x 36" Pioneer Jaw Crushers
30" x 36" & 36 x 42 Traylor Jaw Crushers
25B Telsmith Primary Breaker
36" Superior McCully Primary
20" x 36" & 24" x 36" Pioneer Jaw Crusher
14" & 28" New England Road Machinery
15x24 & 10x36 Cedar Rapids Jaw
3—200 HP & 160 HPSD. Ottumwa Elec. Hoists.
17 Speed Reducers 9.37 to 19.5 H.P.
VIBRATING SCREENS
5' x 12—3 Deck A.C. "Ripl-flo"
4 ELEC. WHIRLEY CRANES
2 Amer. R20-60 Ganty 139' Boom
15 ton AH&D 100' Boom Derrick

R. C. STANHOPE, INC.
60 E. 42nd St., N.Y. 17, N.Y.

SPECIALS

6'-5"x100', 6'x120' & 8'x175' Kilns
10' & 14' Sturtevant Air Separators
12' Raymond Air Separators

CRUSHERS

1—30" x 36", 24" x 36", 18" x 36", 15" x 30", 12" x 24" Jaw Crushers.
2—42" x 16" Allis-Chalmers Crushing Rolls, rebuilt. 36" x 16 rebuilt Sturtevant rolls.
2—24" x 12" Rogers Iron Works Crushing Rolls, Rebuilt.
1—6", 10", 16", 20" McCully Superior Gyratory Crushers.
No. 3 up to No. 12 Gyratory Crushers.

BALL & TUBE MILLS

2—5½'x20', 5'x22', 6'x22', 7'x24' & 7'x35'

DRYERS

8½'x65' & 8'x60

We make new dryers and kilns.

Have you any machinery that you want to sell?

W. P. HEINEKEN, INC.
50 Broad St., N.Y. Tel. Wh. 4-4236

FOR SALE

650-B Bucyrus Erie Elec. Drag, 195', 16 yd.
15-W Bucyrus-Erie Elec. Drag, 215', 13 yd.
9-W Bucyrus Erie Diesel Drag, 165', 13 yd.
7400 Marion Diesel Drag, 175', 13 yd.
625 Page Diesel Drag, 150', 10 yd.
723 Page Diesel Drag, 130', 10 yd.
621-S Page Diesel Drag, 125', 7 yd.
200-W Bucyrus Erie Diesel Drag, 125', 6 yd.
5-W Bucyrus Erie Diesel Drag, 100', 6 yd.
2400 Lima Dragline, 130', 5 yd.
4500 Manitowoc Drag, 120', 5 yd.
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1—Vulcan 8' x 115' Rotary Kiln.
1—Vulcan 6' x 50' Rotary Kiln.
1—Ruggles Cole 5'x30' Double Shell Rotary Dryer.
1—New Penn. Non-Clog Hammer Mill, size No. 5060.

OTHER LOCATIONS

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1—5'6" x 50' Rotary Dryer, ⅜" shell.
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Good Rubber on above equipment and ready to go.
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8' x 48" Hardi~ge **SCRUBBER.**
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Rex 5½ Yd. Mixer, new May 1952, w/Chrysler gas power, single compartment water tank, "202" transmission, front water entry S.N. TW-322, open end, un-mounted.
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Company expansion offers excellent opportunities. Age to 35. Those applying for the first two positions must have experience in a gypsum plant. PABCO BUILDING MATERIALS DIVISION; P. O. Box 269; FLORENCE, COLORADO.

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___Trucks, Mixer Body
___Trucks, Motor
___Valves
___Vibrators
___Welding and Cutting Equipment
___Winches
___Wire Cloth
___Wire Rope

If equipment you are in market for is not listed above, write it in space below.

The principal rock product(s) manufactured by my company is/are indicated "1", "2", "3", in order of importance below.

___Crushed Stone
___Sand & Gravel
___Slag
___Cement
___Lime
___Gypsum
___Ready Mix Concrete
___Concrete Products Type_____
Other nonmetallic mineral (What?)_____

All above information is strictly confidential to be used to guide the manufacturers in supplying proper information.

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☐ Prices ☐ By mail ☐ Urgent

NOTE: See—Where to Buy-Classified Advertising Section for used equipment and complete plant information

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Title_____
Firm_____
Street & No._____
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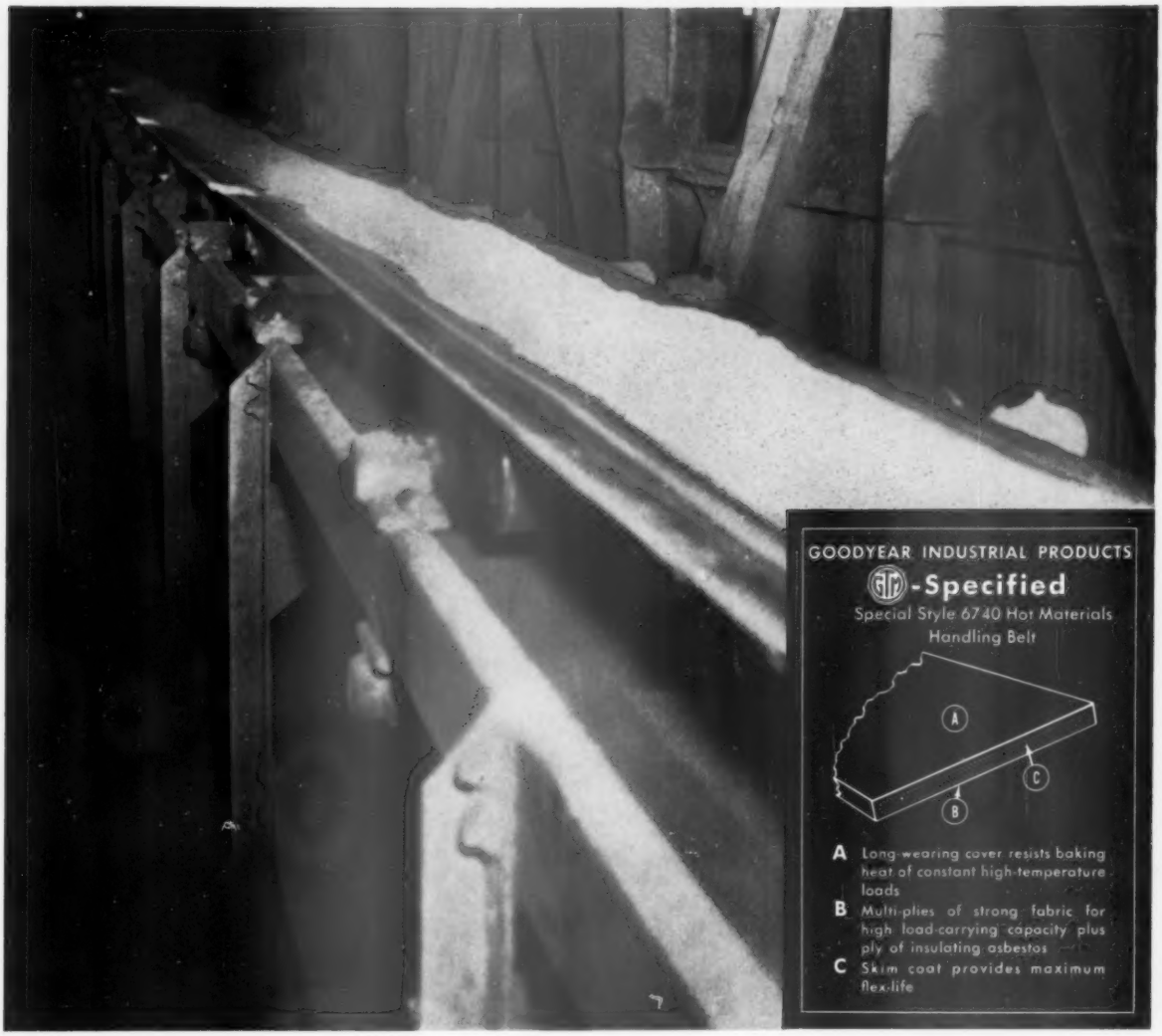
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